

ABSTRACT OF DISSERTATION
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Title of Dissertation: Returning from the Brink: Is There a Theory-Based Explanation for the Attenuation of Horizontal Nuclear Proliferation?

The purposes of this study are to identify reasons for decisions by seven countries in the 1990s to abjure nuclear weapons and to apply international relations theory to interpret those decisions. In order to ascertain reasons behind these national decisions this study uses the structured, focused comparison methodology. This approach enables a researcher to investigate systematically the similarities, as well as differences, between cases that suggest generalizations. Further, because this methodology uses standardized questions that can include variables germane to a particular issue policy-relevant results can be obtained.

The second purpose of this study is accomplished by applying three theories to interpret case study findings. Neorealism has been the most prominent theory of international relations since the late 1970s, and it has been used to explain decisions by states to acquire nuclear weapons. Therefore it is important to determine whether this theory can be used to interpret decisions by countries to abjure nuclear arms. Since neorealism may not be entirely adequate in this regard, two other theories, neoliberal institutionalism and constructivism, are also applied because they call greater attention to

international factors in domestic politics and the role of domestic factors in international relations, respectively.

This study shows that none of the three theories alone is adequate to interpret decisions by national governments to abjure nuclear weapons. Each theory is useful to interpret certain actions by some states, but is less illuminating in other instances. More thorough interpretations seem to reside within the purview of inquiries by scholars who have endeavored to elaborate and to refine neorealism, and thereby to synthesize this theory with elements of neoliberal institutionalism and constructivism to create two-level, multi-factor heuristic frameworks. Findings from the study with nonproliferation policy relevance are that denuclearization decisions are broadly-based choices consisting of security calculations, as well as considerations of political and economic benefits attainable by conformance with the nuclear nonproliferation regime; that sanctions have limited utility; that nonproliferation efforts may require long-term engagement; that alternative approaches to the multilateral nonproliferation regime may exist; and that the durability of nuclear nonproliferation may depend on both near- and long-term definitions of "success."

RETURNING FROM THE BRINK: IS THERE A THEORY-BASED
EXPLANATION FOR THE ATTENUATION OF
HORIZONTAL NUCLEAR PROLIFERATION?

by

CHARLES EDWARD COSTANZO

A DISSERTATION

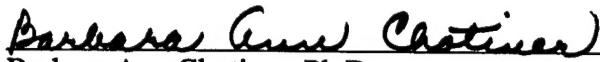
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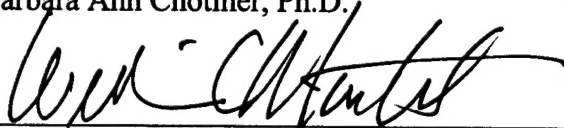
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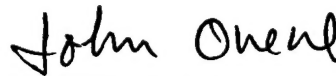
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Submitted by Charles Edward Costanzo in partial fulfillment of the requirements
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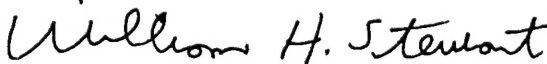

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DEDICATION

To my father,
for showing me the meaning of courage each day of his life;
To my mother,
for teaching me the importance of excellence in life's endeavors;
and
To my wonderful wife, Lee Ann,
for her boundless love, friendship, and sacrifices for me these many years

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Although I am grateful to all of my teachers at The University of Alabama, I extend my deep gratitude to the members of my dissertation committee. Throughout our association I have admired your intellectual rigor, concern for your students, and, most importantly, I will always cherish your friendship. I am especially indebted to Professor Donald Snow for his advice, encouragement, and guidance while I researched and wrote this study. Special thanks are also due to Dr. William Martel of the Air War College, Maxwell Air Force Base, AL, for graciously consenting to be a member of this committee and for his insights on Ukraine. Finally, I am deeply grateful to the wonderful staff at the Air University Library at Maxwell Air Force Base for their outstanding assistance. I am also thankful to have been able to use the superb collection at the Air University Library, perhaps the finest of its type in the country.

My deepest gratitude, of course, is for my wife, Lee Ann. She listened to endless descriptions about the theories and countries used in this study. She also spent too many evenings and weekends alone over many months so that I could complete this dissertation. There is much that I would not have accomplished without her.

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CHAPTER I

APPROACHING THE BRINK: THE SPREAD OF NUCLEAR WEAPONS

A Selective Review of the Literature

Since the beginning of the nuclear age, a principal national objective of the United States (U.S.) and several other countries has been to forestall horizontal nuclear proliferation; that is, the spread of nuclear weapons to more states. The Treaty on the Nonproliferation of Nuclear Weapons (NPT), the Treaty of Tlatelolco (intended to create a Latin American nuclear weapons free zone), International Atomic Energy Agency (IAEA) statutes, nuclear technology supplier guidelines, United Nations (UN) resolutions, and national legislation in many countries have stemmed the spread of nuclear weapons, but the nonproliferation regime has not been entirely successful.¹ In addition to the original five nuclear weapons states (United States, Soviet Union, Great Britain, France, and the People's Republic of China), other countries either have acknowledged their possession of nuclear weapons (South Africa) or have developed programs widely believed to have a nuclear weapons dimension (e.g., India, Pakistan, North Korea, Argentina, and Brazil). Equally important, following the dissolution of the Soviet Union newly-independent Belarus, Kazakhstan, and Ukraine became nuclear weapons states because of the arsenals that they inherited from the erstwhile union of socialist republics. During the Cold War era the principal rationale offered for the

known or suspected spread of nuclear weapons was that states will seek to develop nuclear weapons when they confront significant military threats that imperil their national survival (Sagan 1996/97, 54). Throughout this period an extensive literature was produced to examine the various dimensions of this proposition. Leonard Beaton and John Maddox (1962, 191) have suggested that national attitudes about acquiring nuclear weapons would be influenced by changes in the international balance of power and by the credibility of the nuclear powers' (i.e., the United States and Soviet Union) security assurances to their allies. In a later publication, Beaton (1966, 62) observed bluntly that "nuclear weapons appear desirable in deterring or defeating a particular threat." Although he noted that prestige plays an important role in a national decision to acquire nuclear weapons, he stated that in certain cases concerns about national security are paramount (Beaton 1966, 62).

Among neutral countries the debate about nuclear weapons focused exclusively on national security (Beaton 1966, 65). During the late 1950s and early 1960s, Swedish and Swiss leaders and their respective publics debated the merits of nuclear weapons to defend against cross-border incursions by an adversary. While the Swiss contemplated "a ring of nuclear land mines," the Swedes saw the possible "value of nuclear weapons in stopping an amphibious invasion" (Beaton 1966, 65). Nevertheless, the most serious proliferation threat was considered to exist "among countries that have what they regard as a major security problem" (Beaton 1966, 66).

A more foreboding aspect of this perspective was provided by R.N. Rosecrance (1964, 3), who has offered that "most obviously perhaps, nuclear weapons may be sought as a means of waging or terminating a struggle with a major foe." Rosecrance did not

limit the role of nuclear weapons to deterrence against a significant military threat, but in this early treatment of the subject he judged that nuclear weapons had possible utility for what would become known at the zenith of the Cold War as nuclear warfighting. Unlike Beaton and Maddox, who saw the credibility of American and Soviet nuclear-based security assurances to their allies as an important negative influence on national decisions to acquire nuclear weapons, Rosecrance (1964, 5) has asserted that U.S. and Soviet arsenals "did not obviate the political desire for nuclear weapons...."

Rosecrance's suggestion that not all states capable of producing nuclear weapons would be prepared to relinquish their potential nuclear independence was echoed by other scholars. Kalkstein (1964, 18) has noted that for many states "the main argument for acquiring nuclear weapons is to improve their security, primarily in a local context." This concern for local aggressors, and especially those armed with nuclear weapons, created an incentive for certain countries to contemplate the acquisition of nuclear weapons, or at least to retain the option to do so. In toto, the belief in some states that the security assurances of the nuclear powers were not ironclad and the existence of significant regional military threats, whether actual or perceived, compelled certain countries to consider seriously the development of nuclear weapons.

The potential for the acquisition of nuclear weapons by one country to instigate a proliferation cycle was noted by Stanley L. Harrison (1965, 163): "the first nation to acquire nuclear weapons within a hostile community may prompt others, out of self-preservation, to acquire them too." Regarding this concern, William Van Cleave and Harold W. Rood (1966, 6) have added that "most nuclear candidates are concerned foremost with their unique defense problems." India, for example, was identified as a

prospective nuclear proliferator because a possible foe, the People's Republic of China (PRC), with superior conventional military forces was developing nuclear weapons thereby creating an untenable security situation for India. Further, an Indian response to the PRC's nuclear program would probably provoke Pakistan to undertake a nuclear weapons program as a reply to India, whose conventional forces were superior to its own.

Robert L. Rothstein (1967, 32) has observed that "the states most likely to seek a nuclear capability in the next few years are those involved in a fundamental conflict with an equally powerful neighbor." Thus it is not surprising that India and Pakistan were seen as likely proliferators. The PRC's detonation of its first nuclear device in 1967 undoubtedly spurred India's efforts. Additionally, India's nuclear weapons research program no doubt influenced Pakistan's decision to pursue a similar initiative. In sum, not only the possession of formidable conventional military forces by a potential foe, but the augmentation of those forces with nuclear weapons was seen as providing an incentive for other states to develop nuclear weapons.

Wolf Mendl (1969, 174) has expressed concern that "the spread of nuclear weapons might in the future encourage states to acquire them in order to meet a...threat from another medium power," which "raises the prospect of local arms races as an undesirable by-product." Over a decade later, Robert F. Goheen elaborated on this point. He observed that a state may feel threatened by an adversary's actual or potential nuclear weapons capability and be compelled to develop a similar capability of its own (Goheen 1983, 204). India's nuclear research program was a response to the PRC's nuclear weapons program, and Pakistan's nuclear weapons program was stimulated by India's

activities, especially its detonation of a peaceful nuclear explosive (PNE) in 1974.

Similarly, Argentina's desire to retain a nuclear weapons option was influenced by Brazil's greater military potential (Goheen 1983, 205).

In this security environment it is not surprising that several states capable of producing nuclear weapons either pursued this path or retained the option to do so in the future if their security deteriorated. William Epstein (1976, 105) has depicted the situation "as in the days of the Wild West, possession of a six-shooter was a great equalizer among men, so some of the smaller powers could visualize scenarios wherein possession of nuclear weapons might have a great equalizing effect among nations." This is not to suggest that all small states preferred this route, because it entailed significant political risk and economic burden. Kathleen C. Bailey has pointed out that India's detonation of a PNE had severe political repercussions. The United States and Canada terminated cooperative civil nuclear programs with India, and Japan suspended a foreign aid program to that country (Bailey 1991, 20). Moreover, George Perkovich (1995, 92) has suggested that India's annual outlay for its nuclear weapons program constitutes an economic burden, because it consumes a major fraction of India's yearly defense expenditures.

Yet, there are other kinds of risks for states that abjure nuclear weapons. Kenneth N. Waltz (1979, 102) has lamented that "because some states may at any time use force, all states must be prepared to do so--or live at the mercy of their militarily more vigorous neighbors." Thus non-nuclear states can have special concerns that militate against nuclear abstinence and impel a country to seek nuclear weapons. Epstein (1976, 109) has expressed the situation succinctly: "India is concerned about China; and Pakistan about

India; Israel is concerned about the Arab states; South Africa is concerned about black Africa; Brazil has visions of becoming a great power...and Argentina is, of course, concerned about Brazil."

As the Cold War persisted and the East-West bloc arrangement became a perdurable feature on the international security landscape some of the scholarly literature focused more sharply on whether participation in an alliance with a nuclear-armed partner would dampen the incentives for the horizontal proliferation of nuclear weapons. William B. Bader (1968, 99) has argued that the major powers influenced the decision calculus of prospective proliferators, especially when nuclear-capable states participated in alliances "where the alliance leader is a nuclear power...a significant barrier to the spread of nuclear weapons" existed. William Epstein (1977, 16) was also optimistic about the potential influence of alliances to dissuade potential proliferators: "for countries allied to one of the two superpowers, concern about their military security is not a predominant factor." Conversely, "non-nuclear countries that are not under the nuclear umbrella of any of the nuclear powers and have no alternative means of ensuring their security feel that they may ultimately have to rely on nuclear weapons..." (Epstein 1977, 28).

The influence of alliances to dissuade potential proliferators led some scholars to recommend this arrangement as a crucial component of nonproliferation strategy. In his study of the potential for horizontal nuclear proliferation in Northeast Asia, James E. Dornan (1978, 91) urged that the United States maintain its alliance commitments in the region. Otherwise, he asserted, the barriers to acquiring nuclear weapons by Japan or South Korea could erode, because each country might be compelled to develop such

devices to counter the military threats posed by their regional adversaries. Richard T. Kennedy was even more explicit about the positive influence of alliances to dampen horizontal nuclear proliferation. He stated that measures to alleviate military and political insecurity are an important part of the effort to reduce the motivation to acquire nuclear weapons, and alliances between nuclear and non-nuclear states could have a salutary affect in this regard (Kennedy 1985, 11).

Other scholars of the era were decidedly less optimistic about the role of alliances in stemming the spread of nuclear weapons. D.C. Mazlin (1967, 86) has maintained that for some countries the main incentive to acquire nuclear weapons was a desire to enhance their security; thus, even states aligned with a nuclear superpower could rationalize the acquisition of nuclear weapons. In his study of potential candidates for the nuclear weapons fraternity, Walter B. Wentz (1968, 37) has noted that many states have satisfied their security requirements through alliance participation with a nuclear-armed partner, but not all countries have subscribed to this alternative to unilateral arming. In short, for some states, national decisions to produce nuclear weapons reflected a desire for independence in security affairs (Wentz 1968, 37).

In an assessment of national decisions to ally, Michael F. Altfeld (1984, 523-43) has observed that ensuring a state's security through alliances requires national leaders to weigh the monetary costs of security against the obligations and constraints that alliances impose. Although the development of nuclear weapons may incur substantial economic costs, these may be preferable to uncertain alliance assurances from a nuclear-armed partner to attain one's national security. This explains, at least to some extent, President Charles DeGaulle's decision to withdraw France from NATO's integrated military

structure and to develop national nuclear forces, the so-called *force de frappe*. An alliance arrangement with a nuclear-armed partner may obviate the need for nuclear weapons, but to the extent that "the alliance may be too tenuous, the congruence of interests too transitory, [or] the nuclear power itself may be concerned about counterdeterrence" the smaller power may opt for nuclear independence (Coffey 1970, 121).

On this point, Richard K. Betts (1980, 117) has commented that although the security dilemma of some states was resolved by the extension of the superpowers' nuclear umbrellas, other states could not avail themselves of this option. The weakening of superpower ties with certain countries and the retrenchment of American interests following the Vietnam war conspired to make some states rely increasingly on indigenous resources to ensure their security (Betts 1980, 117). Moreover, the advent of superpower nuclear parity also provided an incentive for nuclear weapons-capable states to pursue the acquisition of nuclear weapons as a surer path to preserve their security.

Beneath the superpower stalemate, the prevailing tendency of nations generally seems to be toward greater self-reliance with only qualified dependence upon the pledged support of the greater power. The self-reliance incentive of nuclear acquisition is sharpened by the increasing frequency and virulence of regional rivalries and conflict. (Hahn 1975, 17)

In sum, a concatenation of actual or perceived tenuous alliance commitments, incongruent interests between nuclear-capable states and their nuclear-armed allies or friends, and superpower nuclear parity influenced some states to develop the instruments that they believed were the sine qua non for their national security: nuclear weapons.

In the late 1980s, Michael Brenner (1987, 55) evaluated alliance relationships as “an ambiguous factor from a proliferation perspective.” On the one hand, alliance arrangements may provide weaker states with confidence and enable the stronger state to pressure its partners to abstain from developing nuclear weapons. On the other hand, factors such as geographic distance from the stronger partner, the international correlation of U.S. and Soviet forces, and the risks facing the weaker alliance member were seen as militating against nuclear abstinence. Ultimately, “it is in the nature of states in an unruly political environment to seek the means required for their own protection and preservation” (Brenner 1987, 55). The central premise of this perspective is that for certain countries the costs and risks of nuclear weapons may not be sufficiently greater than coping with military challenges without such weapons.

In addition to acquiring nuclear weapons to counter threats that emanated from local adversaries, some scholars envisioned small states as seeking such weapons to discourage regional intervention by outside powers. Stanley L. Harrison (1965, 163) has allowed that lesser states could not compete militarily with major nuclear powers, but he added that lesser states could believe that “no attempt will be made to conquer them so long as their smaller nuclear arsenal is sufficient to guarantee greater damage to any aggressor than the conquest is worth.” For example, at one point, Brazil and India claimed the need for a nuclear option “as a guarantee against attacks by nuclear weapons states” (Goldblat 1985, 18). Although the opinion of some observers, such as Georges Fischer (1971, 33), was that such an argument was merely a justification for proliferation,

Brenner (1987, 57) has cautioned that opponents of nuclear proliferation should not commit the common fault of dismissing possible military threats perceived by small or medium states.

Ashok Kapur (1979, 43-44) has observed that "in part, horizontal proliferation...is an attempt to find an alternative to superpower intrusions into regional politics." During the Cold War, the U.S. and Soviet Union envisioned themselves as global actors, but small and medium powers often perceived them as intruders who altered regional political patterns. Accordingly, the acquisition of nuclear weapons by a small or medium power could discourage major power involvement in regional politics by potentially raising the cost of a superpower misstep. Indeed, Kathleen C. Bailey (1991, 19) has suggested that the appearance of the American aircraft carrier USS Enterprise in the Bay of Bengal in 1971, in an apparent gesture of support for Pakistan after India's invasion of that country, was used by advocates of the nuclear weapons program to quell the resistance of Indian opponents of the program. From this perspective, then, "the acquisition of nuclear options...is worthwhile because it makes the further development of the option a consequence of the...behavior of the superpower" (Kapur 1979, 44).

In a collection of essays published by the Institute for Defence Studies and Analysis in New Delhi, India, one scholar, Jasjit Singh, underscored this point by casting the security of small and medium states and the acquisition of nuclear weapons by them in terms of interventions by great powers. He said that "a third world nation could perceive acquisition of nuclear weapons as a *legitimate* means of defence against intervention by overwhelming superior military capability" (Singh 1985, 266). These

modest nuclear forces would be relatively invulnerable because of their small size and easily controlled since their command-and-control arrangements would be not nearly as complex as those of the superpowers. Further, these small nuclear forces would be "a powerful constraint on interventionist strategies" because they would deter regional intrusions without threatening the survival of the superpowers, but would hold at risk only the invading forces of the outside power (Singh 1985, 266). As such, the use of these nuclear forces for tactical purposes would not constitute sufficient grounds for nuclear retaliation by the interventionist state.

Throughout the Cold War period much of the concern about horizontal nuclear proliferation focused on those countries labeled as pariah states. It was feared that a small state "with only marginal and tenuous control over its own fate, whose security dilemma [could not] easily be solved by neutrality, nonalignment, or appeasement, and lacking dependable big-power support" would undertake or hint at steps to acquire nuclear weapons (Harkavy 1981, 136). For states outnumbered by actual or potential adversaries, or for those countries whose national legitimacy was widely questioned, or whose source of conventional weapons was precarious nuclear weapons could be seen as the only viable alternative to preserve their security in an otherwise hostile environment. Under such circumstances for certain countries nuclear weapons were, in Epstein's (1976, 105) words, a "great equalizer."

John J. Weltman (1980, 193) has expressed this outlook in an examination of horizontal nuclear proliferation.

Unless the system of states undergoes a revolutionary transformation, any suggestion that further proliferation can be stopped borders on the absurd. Decisions about the acquisition of nuclear weapons

are not in essence different from the other decisions that autonomous decision-making units continually make about the means by which they will individually advance or protect their interests.

In this assessment the author seemingly conceded that the balance between systemic constraints on acquiring nuclear weapons and the advantages that could accrue to a state by acquiring them favored the latter. In other words, the experience of states in the international system was that countries act to preserve their interests, and such action could entail the acquisition of nuclear weapons. Although not all nuclear-capable states would define and act upon their national security in such terms, certain countries would do so when they confronted serious military threats that they believed imperiled their national survival.

In a volume published several years after Weltman's essay, two panels of U.S. and West European experts organized by the Council on Foreign Relations to study the problem of horizontal nuclear proliferation reached similar conclusions. Among their principal findings the panelists agreed that the proliferation problem was a regional, not global, phenomenon (Council on Foreign Relations 1986, viii). As such, proliferators were not entirely susceptible to international efforts to apply export controls or threats of sanctions. On the basis of their examination of India, Pakistan, Israel, South Africa, Argentina, and Brazil, the panels agreed that stemming the spread of nuclear weapons must be based on efforts to reduce threat perceptions and the underlying tensions that provided the primary motivations to acquire nuclear weapons (Council on Foreign Relations 1986, ix).

The near-consensus among scholars and government officials that horizontal nuclear proliferation was rooted firmly in the perennial search for national security in an

unruly and often unpredictable international milieu continued into the post-Cold War period. Jennifer Scarlott (1991, 689) has portrayed the continuation of horizontal nuclear proliferation clearly.

The seismic shift in the relationship between the two leading nuclear powers is coinciding with, and accelerating, political fragmentation in the Third World. Countries once caught in the U.S. or Soviet spheres of influence now have more freedom to flex their own regional muscles and jockey for position with competing states. The new international order is shaping up to be less predictable than the previous one, combining the elements of a far more complex and unstable international system...with the most destabilizing aspects of the Cold War, including adherence to the doctrine of deterrence.... This deadly convergence of conditions is likely to increase the political capital of nuclear weapons.

Similarly, Roger C. Molander and Peter A. Wilson (1994, 19-20) have noted that the collapse of the Cold War security environment caused countries secure in the character and discipline of the bipolar stalemate to reassess available modalities to attain their survival, including the acquisition of nuclear weapons. In their assessment of possible nuclear futures, the question of limiting the number of nuclear-weapons states to the current members of that special group requires, *inter alia*, "substantial progress on diminishing the sources of the conflicts that stimulated these arsenals in the first place" (Molander and Wilson 1994, 35).

Indeed, an examination of the situation in Southwest Asia, for example, does suggest that lingering security concerns continue to influence the outlook of certain countries regarding the possession of nuclear weapons. A former Consulting Editor (Foreign Affairs) of India's *The Economic Times* has lamented that the continuing legitimacy of nuclear weapons as instruments of national power, lackluster adherence to the NPT by some countries (e.g., Iraq and North Korea), and unresolved regional disputes

create "a strong feeling in India that the nuclear option should be sustained as an insurance against these multiple uncertainties" (Subrahmanyam 1995, 47). This sentiment was echoed by the former Chief of Staff of the Indian Army, who opined that military threats posed by the PRC and Pakistan necessitated a nuclear arsenal as the surest guarantee of Indian security (Sundarji 1995, 57). In a reply to these comments, the long-serving, former chairman of Pakistan's Atomic Energy Commission identified his country's motivations for nuclear weapons, which included a litany of unresolved fears exacerbated by superpower disengagement from regional security issues (Khan 1995, 71-84).

Michael F. May's (1994, 534) observation about the pattern of horizontal nuclear proliferation during the Cold War does seem to have continuing relevance in the post-Cold War period.

Nations that have made a positive nuclear-weapons decision have either perceived a threat to the survival of their state that no other state could credibly deter, or faced a security situation where, with a nuclear-weapons capability, they could significantly increase their voice in matters that mattered to survival.

Peter van Ham also has noted that the perpetual search for national security can influence horizontal nuclear proliferation in the post-Cold War era. The end of the Cold War heralded the departure of the superpowers from many regions. Although the United States and Soviet Union did not have vital interests in some regions, the presence of one side necessitated the presence (or at least the influence) of the other side. This arrangement often brought security assurances or at least established parameters for the regional violence that did occur. In the absence of the superpowers and their influence,

some states may perceive greater incentives to acquire nuclear weapons to preserve their security (van Ham 1994, 51).

As former Undersecretary of Defense for Acquisition and Technology John M. Deutch (1992, 124-25) has pointed out, the fundamental motivation to seek nuclear weapons remains the belief that they will improve a state's national security. Even in regions where the potential for interstate war has declined dramatically, nuclear weapons-capable countries seem reluctant to abandon the nuclear option fearing that doing so could jeopardize their survival. Countries involved in regional security settings may share common interests that require cooperative measures, but spanning the chasm between recognizing the need for interstate cooperation and actually achieving mutually acceptable solutions can be difficult. Under such circumstances, any expectation that a nuclear-capable state will relinquish its weapons or its nuclear option may be wishful.

In the Middle East, for example, Israel and the moderate Arab states have recognized the desirability of cooperating to prevent further interstate war and both sides seem to acknowledge the dangers of regional nuclear competition. Yet, cooperative measures to achieve nuclear restraint in the region have failed, primary because of Israel's refusal to adhere to the nonproliferation norm. Some scholars have commented that Israeli adherence to this norm should not be anticipated soon. Geoffrey Kemp (1991, 180) has stressed that "until there has been a long period of peace in the Middle East, Israel is unlikely to negotiate away its nuclear force." Similarly, Avner Cohen and Marvin Miller (1993, 105-06) have stated that "until Israel feels truly secure, it will continue to regard its unacknowledged nuclear deterrent as an essential ingredient in guaranteeing its very existence and will not relinquish it." The dilemma of desiring

greater cooperation and nuclear restraint versus the demands levied by preserving national security applies to other regions, too. Ultimately, as Kenneth N. Waltz (1989, 50) has suggested, until international politics becomes less competitive and less conflictual states will continue to seek their own ways to preserve their security using whatever means they deem appropriate.

Although some states in the post-Cold War era could seek alliance guarantees to preserve their national security, other "threatened nations may feel less inclined to accept the uncertainties of protection by allies, and the number of independent nuclear forces could thus become very large" (Quester and Utgoff 1994, 7). Given the growing technical skills of developing countries, global industrialization, and the diffusion of legitimate technologies with dual applications in a nuclear weapons program, states motivated to acquire nuclear weapons to respond to military threats will find their task more attainable. Moreover, Marc Dean Millot (1994, 41) has claimed that there may be little that can be done to block the spread of nuclear weapons, since neither denying access to nuclear technologies nor military attacks against the nuclear facilities of known or suspected proliferators is likely to be entirely effective. Clearly, technology denial schemes have been only partially effective and attacks may have unintended consequences, such as dispersing radioactive contaminants, precipitating violence, or worsening the proliferation problem. On the latter point, for example, the "Iraqis attributed their decision to proceed with a secret [uranium] enrichment program, and subsequently a weapons program, to the Israeli bombing of the Osirak reactor in 1981" (Davis and Kay 1992, 22).

George Rathjens (1995, 186) has argued that nuclear deterrence is likely to remain an enduring feature of the international system because the demise of the Cold War and the spread of technology could manifest an environment where, as the “unwillingness of the great powers to guarantee the security of other states...becomes more apparent, the interest of nations in acquiring nuclear weapons for deterrence may increase.” In an assessment of possible nuclear weapons proliferation trends in the Middle East, Shai Feldman reached a conclusion that may be applicable elsewhere. Despite the dangers associated with acquiring nuclear weapons that could constrain their spread, “nuclear weapons provide states with far more robust deterrence than conventional arms” (Feldman 1995, 213). Although it is impossible to prove empirically that nuclear weapons precluded war between the superpowers during the Cold War, some scholars argue that nuclear weapons do compel national leaders to exercise a level of caution regarding decisions to wage war that may be absent otherwise. Donald M. Snow (1995a, 142-43) has noted that the existence of American and Soviet nuclear arsenals resulted in a “necessary peace”: “a peace born not of good will but of the simple realization that war between them was impermissible.”

Several arguments support the decision by small states to acquire nuclear weapons to deter military threats that they perceive to their security. First, even a small arsenal may be sufficient to deter a potential aggressor, even one that is well-armed. During the Cold War, for example, both Great Britain and France subscribed to the concept of minimum deterrence to dissuade Soviet leaders from contemplating aggression. The British adopted the so-called “Moscow Criterion,” which reflected the deterrent value of targeting a potential adversary’s national capital by a small nuclear

arsenal (Freedman 1986, 109 and 123). The French strategy, known as *oeuvres vives*, was probably comparable to the British strategy. *Oeuvres vives* refers to the part of a ship below the water line--the ship's "vital works" (Yost 1986, 132). As such, the French nuclear deterrent was probably targeted against a limited number of vital Soviet administrative and economic assets (Yost 1986, 154). In short, a small state with adequate technical and economic resources that is motivated to preserve its security with nuclear weapons could adopt strategies similar to Great Britain or France, albeit on a smaller scale.

Second, there is little doubt that nuclear weapons can inflict horrendous devastation. The atomic bombings of Hiroshima and Nagasaki provide indisputable evidence of the type of damage that relatively low-yield devices can inflict on urban areas. Such weapons, and probably improved devices, are within the grasp of a modern nuclear-capable country. Moreover, the Chernobyl reactor disaster serves to reinforce the vision of the long-term consequences of radiation exposure (Feldman 1995, 213). Thus even small arsenals consisting of relatively low yield nuclear weapons could be a powerful deterrent for a small state that perceives itself at jeopardy.

Third, because nuclear weapons are less susceptible to a wide-range of national sensitivity calculations than conventional weapons they constitute a more viable deterrent (Feldman 1995, 213). The military strategist Carl von Clausewitz (1976, 584) observed that when war is absolute it becomes "imperative...not to take the first step without considering the last." Historically, conventional war has not assumed a level proximate to any notion of absolute, since it has not threatened the existence of states. Consequently, countries have frequently taken the first step, because they considered the

last step to be insufficiently dire to deter war. Yet, nuclear weapons induce a certain prudence because a national decision to take the first step towards war necessarily includes consideration of the last step, which may entail imperiling one's own existence. Stated differently, leaders of a country contemplating the use of nuclear weapons must ask: "Will my action raise the prospect of escalation...that might lead to the destruction of *my* country?" (Snow 1995b, 51). In short, "nuclear weapons dissuade states from going to war more surely than conventional weapons do" (Waltz 1990b, 743).

Despite the continuing appeal of nuclear weapons for some states, the international system is undergoing a transformation toward a community of states linked by shared interests, common values, and economic and technological interdependence. Among these states, the utility of nuclear weapons and the use of force has declined markedly.² However, there are "some 'transitional' regions [where] traditional rules of military competition continue to govern state relations, and the use of military force is considered an acceptable means of advancing personal ambitions or political objectives" (Blechman and Fisher 1994/95, 81). In these regions "nuclear weapons can thus be regarded as the ultimate security guarantee for a country fearful that its sovereignty might otherwise be jeopardized" (Gjelstad 1996, 106). In order to preserve their survival in a turbulent, uncertain environment states will, as Scott Sagan has noted, seek nuclear weapons when they confront significant military threats that imperil their national existence.

More formally, this rationale for a national decision to acquire nuclear weapons finds expression in a contemporary theory of international relations known as neorealism.³ For the neorealists power, usually military power, is a crucial variable in

interstate relations, but “less as an end in itself than as a necessary and inevitable component of a political relationship” (Dougherty and Pfaltzgraff 1997, 80).⁴ Thus an important aspect of neorealism is whether it can also account for a national decision by a country to be a non-nuclear weapons state. Stated differently, if military power is a component in interstate political relationships and if nuclear weapons are the quintessential instruments of military power, can neorealism explain decisions by South Africa, Belarus, Kazakhstan, and Ukraine to give up nuclear weapons and decisions by Argentina, Brazil, and North Korea to abandon programs widely believed to have a weapons dimension?

If, as neorealists posit, states seek military power to preserve their survival in the decentralized, self-help international political system and “war becomes less likely as the costs of war rise in relation to the possible gains,” then one would expect all states either to acquire nuclear weapons or to ally with existing nuclear powers (Waltz 1989, 48). Given the uncertainties about the credibility of security guarantees from a nuclear-armed ally, it would seem that most, if not all, states with the economic and technical wherewithal to manufacture nuclear weapons would do so. Indeed, in an early study of the implications of advanced military technology, one group predicted that “each year will produce new drives impelling nations to seek nuclear capabilities,” so that “by 1970, most nations with appreciable military strength will have in their arsenals nuclear weapons” (National Planning Association 1958, 41-42). In 1963, President John F. Kennedy echoed this concern in a speech before the UN General Assembly when he observed that “he was haunted by the feeling that by 1970...there may be ten nuclear powers instead of four, and by 1975, fifteen or twenty...” (U.S. President 1963, 280).

Despite the global dissemination of scientific and engineering knowledge, technology, and nuclear materials, as well as the persistent character of the international political system that neorealists claim impels states to exploit such resources for purposes of military security, the rampant horizontal proliferation of nuclear weapons predicted by scholars and policymakers had not occurred. In the first decade of the nuclear age (1945-1955), three countries detonated nuclear devices (United States, Soviet Union, and Great Britain). In the second decade of the nuclear age (1955-1965), two states detonated nuclear explosives (France and the PRC). In the third decade of the nuclear age (1965-1975), only one additional country (India) exploded a nuclear device (Reiss 1988, xxii). By the sixth decade of the nuclear age India and Pakistan had become full-fledged nuclear weapons states, but equally important seven other countries had returned from the nuclear brink either by relinquishing nuclear weapons or by abandoning nuclear weapons-oriented research programs--developments that seemed inconsistent with the neorealist perspective.

Research Objectives

This research strives to accomplish two objectives. First, it explores whether neorealism as originally proposed by Kenneth N. Waltz and as elaborated and refined by subsequent scholars can explain national decisions by certain countries to become non-nuclear weapons states. Neorealism has been since the late 1970s the most prominent theory of international relations (Mayer 1996, 51). Therefore it is important to examine whether in the post-Cold War era neorealism can still explain the behavior of states as they seek to preserve their survival in an often unruly and unpredictable security environment. Second, since neorealism may not be entirely adequate in this regard

alternative theories will be examined to determine if they offer a more thorough theoretical explanation for decisions by certain countries to be non-nuclear weapons states.

Glenn Chafetz (1993, 128) has suggested that two alternative theories, constructivism and neoliberal institutionalism, may have more capacity to explain "why the number of states fearful or ambitious enough to seek nuclear weapons will decline rather than increase as a result of the end of the Cold War."⁵ Chafetz (1993, 128) has proposed the use of these two theories because they "call greater attention to the role played by domestic factors in international relations and international factors in domestic politics," respectively. As will be discussed later in this dissertation, the dichotomy between domestic and international politics asserted by the standard neorealism articulated by Kenneth N. Waltz precludes factors in one realm from having much, if any, influence on the other realm.⁶ The use of constructivism and neoliberal institutionalism to interpret national decisions regarding the retention or acquisition of nuclear weapons may contribute to a fuller understanding of why seven countries decided in the post-Cold War period to be non-nuclear weapons states.

Method of Investigation

In an assessment of dilemmas in comparative research, Sidney Verba (1976, 113) has summarized the basic issue with the case study approach.

To be comparative, we are told, we must look for generalizations...that apply to all cases of a particular type.... Generalizations fade when we look at particular cases.... Since the cases are few in number, we end up with an explanation tailored to each case. The result begins to sound quite idiographic or configurative.

Later, Alexander L. George and Richard Smoke (1974, 93) inferred from their study of deterrence in American foreign policy that the problem with the case study approach of investigation in the social sciences is that the cases examined are often not comparable. As a consequence, case study findings do not cumulate and they are mostly anecdotal. Given these problems it may seem that investigators who plan to use the case study approach must accept a Hobson's choice of either abandoning a research topic or conceding that research results cannot be generalized.

In order to avoid acceptance of either choice, George and Smoke (1974, 95) have proposed the case study method of "focused comparison," which George (1979, 43-68) further developed and re-labeled "structured, focused comparison" in a subsequent essay. The principal benefit of this methodology is that it "strikes an intermediate position between statistical analysis and intensive case studies and has special advantages for 'policy-relevant' research" (Oneal 1982, 50). It resembles statistical analysis because it examines multiple cases and establishes comparable results from them by posing a limited number of questions, which are usually closely related to each other. (This does not, however, preclude asking additional questions that may illuminate unique features of a case that are relevant to the study). Further, this methodology also resembles the case study approach because it examines each case in detail, which necessarily makes it ideal to study a limited number of cases.

The structured, focused comparison approach permits the researcher to discern similarities among cases that suggest possible generalizations, as well as differences between cases that also may be valuable. In both instances the use of the same questions to examine each case yields a systematic analysis generally absent from case studies. A

special advantage of structured, focused comparison over statistical analyses is that it has “potentially a significantly greater degree of relevance to real policy problems than is usually enjoyed by statistically validated generalizations” (George and Smoke 1974, 97). Moreover, because the standardized questions can include variables which policymakers deem to be germane to a particular problem policy-relevant results can be obtained by focusing on specific features associated with decision making or utility calculations (George and Smoke 1974, 97). Since this study is concerned with identifying a theory-based explanation for national decisions by seven countries either to relinquish nuclear weapons or to abandon weapons-oriented research programs the structured, focused comparison method is ideal to cull the factors that influenced those decisions. This could be especially important in light of efforts by the United States to develop an integrated approach to stem the spread of nuclear weapons among the few states that continue to perceive some value in their possession.

Case Study Design

This research will examine decisions by South Africa, Belarus, Kazakhstan, Ukraine, Argentina, Brazil, and North Korea either to become or to remain non-nuclear weapons states. The inquiry will rely extensively on scholarly and periodical literature, and it will refer to previous case studies on the subject, although new case studies will be developed using the structured, focused comparison approach. Each case study will be divided into three sections.

Approaching the Brink

This section provides background information concerning the pursuit of nuclear weapons by Argentina, Brazil, North Korea, and South Africa, as well as the nuclear inheritance of Belarus, Kazakhstan, and Ukraine.

Reversing Course

This section discusses broadly the factors leading to each country's decision either to restrain its nuclear weapons ambitions or to relinquish weapons inherited in the aftermath of the Cold War.

Returning from the Brink

This section examines national decisions by the seven case study countries either to relinquish nuclear weapons or to abandon research programs aimed at producing such devices. The following questions, based on a format suggested by George (1979, 56), will be used to study these decisions.

A. Security Environment

1. Did the security environment change so that national leaders perceived less threat?

This question pertains to the neorealist argument about the structure of the international system. That is, given the character of the international system states acquire nuclear weapons when they confront significant military threats that imperil their national survival. If one applies the standard neorealist view of the international system this question would invariably be answered negatively, since the structure of the international system has not changed fundamentally since the dawn of the state-centric system. However, the question merits consideration, because although there is no

superordinate authority to control and to regulate state behavior the international system is not chaotic. In other words, the overall structure of the system has not changed fundamentally, but some states may view the system as less threatening than before. If so, this question would identify the reasons for this altered outlook regarding national security.

2. Did additional factors associated with the security environment influence national leaders that their country should become or remain non-nuclear?

This question examines whether a national decision to be non-nuclear is based on some factor operating at the supranational level other than a change in external threat perception alone. For example, a decision to be non-nuclear could be based on other factors, such as third party security guarantees, fear of third party coercive measures, or some other factor in the security environment aside from external threat.

B. Domestic Environment

1. Did a change in the attitude among national decision makers regarding military competition with potential adversaries influence a decision to be non-nuclear?

This question explores whether attitudes embraced by key government leaders concerning military competition with possible foes were subsequently modified and influenced a national decision to be a non-nuclear weapons state.

2. Did specific people or groups who supported or sustained a nuclear weapons program lose prominence or depart from the national decision making arena?

This question delves into whether certain individuals or organizational actors were significant factors in national decisions about nuclear weapons. The presence,

reduced influence, or absence of important domestic players may have a bearing on decisions to be a nuclear or non-nuclear state.

3. Did specific people or groups emerge who opposed nuclear weapons or nuclear research programs and influenced the national decision to be non-nuclear?

The appearance of active domestic players opposed to nuclear weapons could be an important factor in nuclear weapons decision making. The emergence of opposition could be especially crucial if nuclear weapons advocates were either absent from or had weakened influence at the national level. This question examines these considerations.

4. Did socioeconomic factors contribute to a national decision to be non-nuclear?

This question addresses whether domestic socioeconomic considerations influenced government officials to decide either to relinquish existing nuclear arsenals or to abandon weapons-oriented research programs.

5. Did certain values upon which the government was based influence a national decision to be a non-nuclear weapons state?

This question examines whether the adoption by the national government of values such as coexistence, cooperation, or pacific conflict resolution had a positive influence on a national decision to be non-nuclear.

C. Institutional-setting⁷

1. Did the nuclear nonproliferation regime influence the national decision to be non-nuclear?

This question seeks to determine whether states that had heretofore scorned the nonproliferation regime subsequently submitted to it and, more importantly, why.

D. Other Factors

1. Did any factor or factors in addition to those enumerated in the questions listed above influence the national decision to be non-nuclear?

As George and Smoke (1974, 96) have observed, the use of a set of standardized questions does not prohibit posing additional questions of any case if they are pertinent to single out unique features of that case. Therefore, in addition to identifying similarities that suggest possible generalizations among cases regarding national decisions to be non-nuclear weapons states, this question permits the systematic investigation of differences between cases.

How This Study Is Organized

Chapter II elucidates the essential elements of the three theories of international relations identified above to inquire into why seven countries in the post-Cold War era chose to be non-nuclear weapons states. This chapter provides the theoretical underpinnings for the research objectives, namely to identify a theory-based explanation for the attenuation of horizontal nuclear proliferation in the late twentieth century. Chapter III applies the structured, focused comparison approach to case studies of Argentina, Brazil, and North Korea to ascertain plausible reasons for national decisions to abandon programs widely believed to have a nuclear weapons dimension. Chapter IV applies structured, focused comparison to case studies of South Africa, Belarus, Kazakhstan, and Ukraine to explore the reasons behind their decisions to relinquish nuclear weapons either developed through indigenous efforts or inherited following the Cold War. Chapter V presents the findings from the case studies and interprets them vis-

à-vis the theories discussed in the second chapter. Further, Chapter V discusses some conclusions relevant to nuclear nonproliferation policy.

CHAPTER II

NEOREALISM, NEOLIBERAL INSTITUTIONALISM, CONSTRUCTIVISM, AND INTERNATIONAL RELATIONS

This chapter examines the scholarly literature that pertains to neorealism and its variants, neoliberal institutionalism, and constructivism in order to identify the essential elements of these theories of international relations. This discussion is necessary to establish the theoretical foundation that will be used later in the study to interpret national decisions by seven countries to remain or to become non-nuclear weapons states. The discussion begins with neorealism and its variants; that is, those efforts by scholars to elaborate and to refine Kenneth N. Waltz's original theory. The discussion then proceeds to neoliberal institutionalism, a theory that other scholars believe is useful to explain the circumstances for interstate cooperation under the prevailing conditions of international politics. The chapter concludes with a discussion of constructivism, whose proponents are less concerned than neorealists or neoliberal institutionalists with the instrumental rationality of states, but more interested in the cognitive, intersubjective conception of process that constructivists assert exists among states and is key to understanding state interaction.

Neorealism and Its Variants

Kenneth N. Waltz's book, *Theory of international politics*, is widely regarded as the major statement on neorealism (Keohane 1986a, 16), while the theory itself has become a dominant school of thought in international relations (Buzan, Jones, and Little

1993, 1). Indeed, it is no exaggeration that Waltz's book influenced much of the theoretical debate in international relations during the 1980s and that reactions to it continue to resound in the scholarly literature of the 1990s (Buzan et al. 1993, 1). The purpose of this section of this chapter is to examine the essential elements of neorealism discussed in Waltz's seminal work, and to probe some the literature with a neorealist orientation that followed the publication of his book. This is not to suggest that there is consensus among these scholars about neorealism, for there are notable differences in their thinking. Nonetheless, much of the scholarship on the subject that followed publication of *Theory of international politics* refines and elaborates Waltzian neorealism.

Waltz's theory of international politics is systemic rather than reductionist. This outlook asserts that an understanding of international politics is not possible by an examination of elements or combination of elements at national and subnational levels.

It is not possible to understand world politics by simply looking inside of states. If the aims, policies, and actions of states become matters of exclusive attention or even of central concern, then we are forced back to the descriptive level; from simple descriptions no valid generalizations can logically be drawn. We can say what we see, but we cannot know what it may mean. Every time we think that we see something different or new, we will have to designate another unit-level 'variable' as its cause. If the situation of the actors affects their behavior and influences their interactions, then attempted explanation at the unit level will lead to the infinite proliferation of variable.... (Waltz 1979, 65)

In the main, Waltz's criticism of reductionist theories of international politics focuses on the proliferation of unit-level variables, which reduces parsimony, introduces complexity, and can lead to tautological arguments. In short, reductionist theories lead to "endless arguments that are doomed to being inconclusive" (Waltz 1979, 65).

Further, Waltz has observed that a disparity exists between the variety of actors and the variations in their actions and the variety of international outcomes. Stated differently, "the similarity and repetition of international outcomes persist despite wide variations in the attributes and in the interactions of the agents that supposedly cause them" (Waltz 1979, 67). In Waltz's view, such a situation is attributable to the influence of systemic, not unit-level, causes. Not only is a systems theory needed to explain international politics, such a theory is possible to construct.

A systems theory of international politics reveals why unit-level changes manifest far fewer alterations in outcomes than would occur otherwise, and it also explains constancy in international political patterns. In the Waltzian formulation "the structure of a system acts as a constraining and disposing force, and because it does so systems theories explain and predict continuity within a system" (Waltz 1979, 69). Nonetheless, structures may change, even suddenly. "A structural change is a revolution, whether or not violently produced, and it is so because it gives rise to new expectations about the outcomes that will be produced by the acts and interactions of units whose placement in the system varies with changes in structure" (Waltz 1979, 70). A systems theory of international politics can "describe the range of likely outcomes of the actions and interactions of states within a given system and show how the range of expectations varies as systems change" (Waltz 1979, 71).

Such a theory of international politics also explains how the ordering of the system acts to constrain the units, such as states, within it (Waltz 1979, 72). Systems theory explains the forces to which states are subject from which inferences about anticipated behavior can be made (Waltz 1979, 72). Moreover, systems theory also

facilitates inferences about the ways in which states will compete with each other and adjust to one another (Waltz 1979, 72). In sum, systems theory explains "why different states behave similarly and, despite their variations, produce outcomes that fall within expected ranges" (Waltz 1979, 72).

According to Waltz, in international politics the states of greatest capability set the stage not only for their own activities, but for the activities of other states as well. Thus "concern with international politics as a system requires concentration on states that make the most difference" (Waltz 1979, 73). Robert Gilpin (1981, 29) has elaborated on Waltz by noting that authority in the interstate system is exercised by "the dominant powers [that] organize and control the processes of interactions among the elements of the system." These dominant states, whether they were the great powers of the nineteenth and early twentieth centuries or the superpowers of post-World War Two, "establish and enforce the basic rules and rights that influence their own behavior and that of the lesser states in the system" (Gilpin 1981, 30).

Given the importance of structure in the neorealist literature, one is obligated to inquire into the meaning of the term. For Waltz (1979, 73) structure is "a set of constraining conditions...[that] acts as a selector, but it cannot be seen, examined, and observed at work." Structure affects behavior in the system, but only indirectly and in two ways: socialization of the actors and competition among them (Waltz 1979, 74).¹ That is, actors not only influence each other, but are influenced by the situation created by their interaction. For example, two actors, (e.g., states) embroiled in a conflict may desire to end their dispute, declare their intention to do so, but nonetheless they may be swept along by the dispute.

In Waltz's construct, socialization and competition reduce, shape, and mold behavior among actors. Socialization promotes similar attributes and behavior among states (Waltz 1979, 76). Further, competition is "regulated...by the 'rationality of the more successful competitors,' who through skill or good fortune are more adept than other states (Waltz 1979, 76-77). The other states either "emulate them or fall by the wayside" (Waltz 1979, 77). In other words, competition stimulates states to accommodate their ways to the most acceptable and successful practices in the system (Waltz 1979, 77). Ultimately, socialization and competition are two dimensions of a process whereby the variety of behaviors and outcomes is constrained (Waltz 1979, 77).

In order to establish the distinctiveness of the international political structure, Waltz contrasts it with domestic structures on the basis of three terms. First, "the parts of domestic political systems stand in relation of super- and subordination" (Waltz 1979, 88). Since such systems are centralized and hierarchical, some actors are empowered to command, while others are compelled to conform. Conversely, the international political system is decentralized and anarchical. There is no superordinate authority above the states; hence, each state is the equal of the others and is not obligated to comply with the dicta of another power, at least in a legal sense.

Since Waltz (1979, 89) envisions the first term in his definition of structure as an organizational principle, the most notable feature of international political structure is an absence of organization and order. Thus "international politics is more nearly a realm in which anything goes" (Waltz 1979, 91). Stated somewhat differently, "states recognize that, in anarchy, there is no overarching authority to prevent others from using violence, or the threat of violence, to destroy or enslave them" (Grieco 1988, 497-98). Although

some states may be “driven by greed or ambition,...anarchy and danger of war cause all states always to be motivated in some measure by fear and distrust” (Grieco 1988, 498).

Waltz presumes that states seek to ensure their own survival within the anarchic international political structure. The objectives that states pursue may vary infinitely, but survival is the *sine qua non* for the attainment of those objectives.² Waltz (1979, 92) recalls that socialization causes states to recognize that structure constrains their behavior and that they must “conform their actions to the patterns that are most often rewarded and least often punished.” In short, “the game one has to win is defined by the structure that determines the kind of player who is likely to prosper” (Waltz 1979, 92).

The second term in the Waltzian definition of structure pertains to the functions performed by units in a system. Since domestic political structures are centralized and hierarchic, units are functionally differentiated on the basis of super- and subordinate relationships (Waltz 1979, 93). However, in the international political structure states are not functionally differentiated, because anarchy imposes a condition that requires all states to perform similar functions. States may vary in size and the disposition of various measures of power, yet in international politics they all perform similar tasks. This is to suggest that since sovereign states exist in an anarchic system they must all perform the same functions to attain their objectives, because they cannot rely on another to do so.³ Insofar as states are functionally undifferentiated, Waltz excludes this term from his theory of international politics.

The third term in the definition of political structure is that states are “distinguished primarily by their greater or lesser capabilities for performing similar tasks” (Waltz 1979, 97). Consistent with his instruction to exclude unit attributes from

the definition of structure, Waltz argues that the distribution of capabilities is not a unit attribute. Rather, it is a system concept that enables an observer to ascertain how variations in international structure occur. More specifically, the range of expectations that emerges in international politics is a function of the ordering principle (anarchy) and the distribution of capabilities. Together the ordering principle and the distribution of capabilities create "a positional picture, a general description of the ordered overall arrangement of a society written in terms of the placement of units rather than in terms of their qualities" (Waltz 1979, 99).

In his assessment of the positional nature of states in the international political structure Waltz (1979, 102) has observed that "the state among states...conducts its affairs in the brooding shadow of violence." Consequently, because "some states may at any time use force, all states must be prepared to do so--or live at the mercy of their militarily more vigorous neighbors" (Waltz 1979, 102). Other neorealists have offered similar admonitions about the state-of-the-state in the international system. Robert Gilpin (1986, 304) has noted that international politics is conflictive: "anarchy is the rule; order, justice and morality are the exceptions." This does not presume that "one must always forego the pursuit of these higher virtues, but...the final arbiter of things is political power" (Gilpin 1986, 304). States ignore this reality at their own peril.

Waltz maintains that the anarchic structure of international politics limits interstate cooperation in two ways. First, given the self-help character of international politics, each state is constrained to cooperate because it fears that other states will use gains derived from cooperation to exploit their position. Even in situations where mutual gains are possible, cooperation may not occur because states fear changes in their power

position relative to other states, changes that may be exploited in the future by a state with greater net gains. Second, states may shun cooperation because of a fear of dependence on another state for survival. That is, "states seek to control what they depend on or to lessen the extent of their dependency" (Waltz 1979, 106).⁴

In this paradigm "the international imperative is 'take care of yourself!'" (Waltz 1979, 107). National leaders may recognize and even acknowledge the salutary effects of interstate cooperation, yet be unable to engage in cooperation because of the anarchic character of international politics. Although defense spending is "unproductive for all and unavoidable for most," state independence and survival are the compensation for this sacrifice (Waltz 1979, 107). Nonetheless, the maintenance of state sovereignty produces certain outcomes that many, and perhaps all, states would rather avoid, but are unable to escape. Thus, as Walt argues, it is not only the actors in the interstate system that influence each other, they are influenced by the situation created by their interaction.

As long as the structure of international politics remains unchanged, it is not possible for changes to occur in the intentions and actions of states "to produce desirable outcomes or to avoid undesirable ones" (Waltz 1979, 109). According to Waltz (1979, 109), "the very problem...is that rational behavior, given the structural constraints, does not lead to wanted results." Some states may wish to cooperate, but they are constrained because they fear other states will not reciprocate and will exploit them. States "may seek reasonable and worthy ends, but they cannot figure out how to reach them" (Waltz 1979, 110). By acting only to preserve its own interests each state creates a situation where distrust militates against cooperation. When states behave in this fashion, all fare

worse than if they had cooperated for mutual gain (Dougherty and Pfaltzgraff 1997, 509-10).

Waltz accords a meager role for nonstate actors to alleviate this situation. He asserts that to act effectively nonstate actors "either themselves acquire some of the attributes and capabilities of states,...or they soon reveal their inability to act in important ways except with the support, or at least the acquiescence, of the principal states concerned with the matters at hand" (Waltz 1979, 88).⁵ In Waltz's (1979, 94) judgment:

states set the scene in which they, along with nonstate actors, stage their dramas or carry on their humdrum affairs. Though they may choose to interfere little in the affairs of nonstate actors for long periods of time, states nevertheless set the terms of the intercourse, whether by passively permitting informal rules to develop or by actively intervening to change rules that no longer suit them. When the crunch comes, states remake the rules by which other actors operate.

Other neorealists have echoed and elaborated on Waltz's outlook on this point. Gilpin (1981, 35) has observed that the foundation of the rights and rules that govern interstate behavior is the power and interests of the dominant states. Similarly, John J. Mearsheimer (1994/95, 7) has asserted that "institutions are basically a reflection of the distribution of power in the international system," because they are "based on the self-interested calculation of the great powers, and they have no independent effect on state behavior."

Given these circumstances it is not surprising that neorealists conclude that international politics is "the realm of power, of struggle, and of accommodation" (Waltz 1979, 113). The existence of power, especially military power, and the potential for its use by one or more states always looms against the backdrop of interstate relations. In

international politics “force serves, not only as the *ultima ratio*, but indeed as the first and constant one” (Waltz 1979, 113). That force may be used by some states to cripple or to destroy other states makes it exceedingly difficult for all states to escape the competitive dimension of international politics (Waltz 1979, 118-19). Ultimately, “those who do not help themselves, or who do so less effectively than others, will fail to prosper, will lay themselves open to danger, will suffer” (Waltz 1979, 118).

In order to preclude such a dire outcome, states seek power as a means to an end, not as an end in itself (Waltz 1979, 118). Joseph M. Grieco (1988, 498) has added that “individual well-being is not the key interest of states; instead, ...*survival* is their core interest.” Driven by a desire to survive, “states are acutely sensitive to any erosion of their relative capabilities, which are the ultimate basis for their security and independence in an anarchical, self-help international context” (Grieco 1988, 498). Therefore the “major goal of states in any relationship is not to attain the highest possible individual payoff,” but “to prevent others from achieving advances in their relative capabilities” (Grieco 1988, 498). Likewise, as Waltz (1979, 126) has noted, “the first concern of states is not to maximize power but to maintain their positions in the system.”

In order to preserve their stature in the international system “contending states imitate the military innovations contrived by the country of greatest capability and ingenuity,” so that “the weapons of major contenders, and even their strategies, begin to look much the same all over the world” (Waltz 1979, 127). Given this viewpoint, it is not surprising that certain states fixed in an anarchic, self-help system have felt compelled to

adopt the most formidable military innovation of the twentieth century – nuclear weapons. Indeed, one neorealist scholar portrayed the situation as follows:

The spread of nuclear weapons is determined by international politics, that is, the relationship among states, the constituent units of the international political system. This relationship is governed by the structure of the international system. It is, therefore, the structure of the international system and the manner in which it is ordered that determine the rate and scope of nuclear weapons proliferation. (Frankel 1993, 40)⁶

This perspective, which ascribes a central role for military force in interstate politics, asserts neither chaos nor the constancy of war in the international system. Rather, as Frankel (1993, 43) explains:

a state with access to greater amounts of force has more control over its security than a state with access to lesser amounts of force. The importance of force means that in anarchical systems units are arranged in accordance with the power they possess, not the authority of legitimacy they claim to have. International relations are relations of strength, and it is a state's strength that determines its position in the international system.

Since the arrangement of states relative to each other on the basis of military capabilities can be a crucial determinant in whether a state preserves its independence and security, possession of greater capabilities, e.g., nuclear weapons, facilitates the goal of state survival in an anarchic environment.

The foregoing discussion of the literature suggests certain essential elements of neorealism.⁷ First, the ordering principle of the international political system is anarchy, which establishes that the system is composed of independent states subject to no superordinate authority. Second, these independent states possess military capabilities that enable them to inflict violence on each other. Third, states can never ascertain with certitude the intentions of other states, and even if they could their security would not be assured because intentions can change. Fourth, the basic motivation of all states is

survival. Fifth, imperfect information leads to mistakes by states and limits the extent of their rational behavior (Mearsheimer 1994/95, 10). Alone “none of these assumptions...mandates that states will behave competitively,” but “when taken together, however, these five assumptions can create incentives for states to think and sometimes behave aggressively” (Mearsheimer 1994/95, 10-11).

From these neorealist assumptions about the international system, three patterns of behavior are deducible. First, states possess military forces and since there is no superordinate authority to restrain the use of these forces, states perceive external threats and often distrust each other. Second, each state seeks to survive and since none can depend on any other entity to ensure its survival, each must prepare to defend itself. Third, states seek greater amounts of military capability vis-à-vis other states to ensure their position relative to other states (Mearsheimer 1994/95, 11-12).⁸

Thus far, the discussion of the neorealist perspective has focused on systemic factors that influence state behavior. Although this is generally viewed as the standard neorealist outlook on international politics, not all scholars draw as sharp a dichotomy between the domestic and international levels of politics as Waltz. In an effort to delve more deeply into the complex relationship between factors at the domestic and international levels that influence interstate behavior, Gottfried-Karl Kindermann (1985, 7) at the University of Munich has proposed a refinement of neorealism that “proceeds from the assumption that a much higher degree of...cross-disciplinary cooperation is required before essential progress can be made in our ability to analyze and, if possible, to predict political action processes of systems as complex as...the nation-state....” Power remains a crucial component in interstate relations for Kindermann’s Munich

School of Neorealism, but it is neither the only nor the most important motivational determinant in international politics. In short, Kindermann argues, to understand the complex interaction between states, one must consider more factors than power alone. Further, this variant of neorealism elaborates a theory of interstate politics for "situation-analysis and situation-evaluation," which can be used to explain "interaction-relations between states and other action-systems of international politics within a defined period of history past or present" (Kindermann 1985, 11-12).⁹ This approach, which Kindermann labels "constellation analysis," consists of several interdependent phases of inquiry: system and decision, interest and power, perception and reality, norms and advantage, and cooperation and conflict, which culminate with a synoptic phase (Kindermann 1985, 13).

The first phase of constellation analysis seeks to understand "the socio-political structures of the involved states and other action-systems, putting particular emphasis on their processes of decision-making and the structure and...functioning of the system's center of leadership" (Kindermann 1985, 13). In this phase, Kindermann (1985, 13) assigns importance to domestic politics, which has an "impact upon the foreign policy formulation by the system's leadership center." Factors such as political support for or opposition to a country's decision makers, a state's economy, as well as its culture and geography, *inter alia*, are judged by the Munich School as crucial elements in the formation of a country's policies regarding relations with other states.

The second phase of constellation analysis endeavors to ascertain the national interests of states and the power available to them to attain those interests (Kindermann 1985, 14). Kindermann's inventory of national interests is similar to Waltz: the position

of one's country relative to other states, the prevention of foreign intrusions, and, of paramount importance, the preservation of one's political system. However, Kindermann (1985, 15-16) extends the analysis of national interests to encompass not only "real interests," those that are concrete and publicly or secretly sought by states, but also "pretended interests, proclaimed by governments for purposes of domestic or foreign consumption" and "potential interests," which are latent interests that are not articulated due to internal or external constraints. This distinction between different types of interests is significant because, for example, a potential interest could be transformed into a real interest by a change of government, national attitude, or government policy, thus ushering in a new period in the relations between states (Kindermann 1985, 16).

The second phase also includes an analysis of power positions among the actors within the international system. Kindermann (1985, 16) has stated that "the power position of each action-system is relative and has to be compared with the power positions of other action-systems within the same constellation." This formulation is similar to Waltz's view of power; however, Kindermann would also analyze the power positions of nonstate actors, whereas Waltz would dismiss such actors as largely irrelevant. Nevertheless, an important dimension of the Munich School's analysis of power relations in the international system does parallel Waltz, since Kindermann (1985, 17) has observed "not power merely for the sake of power...but rather [for] self-preservation and self-realization...to attain self-defined goals or advantages." In terms of this aspect of power analysis the Munich School's perspective accords with Waltz's (1979, 107) view that "in an unorganized realm each unit's incentive is to put itself in a position to take care of itself."

The third phase of the Munich School's constellation analysis involves an examination of reality and perception. Kindermann's (1985, 18) vivid description of the rationale for conducting this phase of analysis suggests the important relationship between reality and perception in interstate relations.

Man's knowledge of the world exists only on the basis of...subjective perceptions which...create new socio-political realities by determining the nature and direction of concrete actions. The vast majority of phenomena in international politics cannot be physically seen but can only be perceived through models or images (*Vorstellungsbilder*) constructed in the mind of a given observer.

Kindermann has noted that each person possesses a subjective perception of reality that conditions his or her actions. Following upon this observation, Kindermann argues that in interstate relations national leaders make decisions shaped by their individual perceptions of reality.

Subjective realities result not only from the complexities of international politics, but from personal "views or images of human affairs [that] are influenced...by our past experiences, by prejudice formed on the basis of such experiences and by our priorities of value, by our hopes and fears, and by our modes of judging causalities of events" (Kindermann 1985, 19). Each person possesses his or her own *Weltverständnis* (world comprehension) of "subconscious and conscious images of the world and of the self [that] do act as a filter when outside information reaches the cognitive system of a given person" (Kindermann 1985, 19). Kindermann says that national leaders are not immune from this cognitive process, which is why the third phase of constellation analysis is so important. National leaders possess a vast mental storehouse of views and images that have been formed by their past experiences, which in turn shape their decisions in interstate relations. Kindermann (1985, 20) has suggested that it is not only essential to

understand the nature of one's own perceptual realities, but also to ascertain "as correctly as possible the perception and interest-conditioned motivations of the other side, of the adversary for example." Overall, then, the third phase of constellation analysis not only departs from standard neorealism because it emphasizes the motive-content of national decision makers, it also modifies Waltzian neorealism to the extent that it focuses on unit-level attributes.¹⁰

The fourth phase of constellation analysis examines how normative phenomena influence interstate relations. Standard neorealism ascribes little, if any, importance to norms in international relations, preferring instead to note simply that "the story...of international politics is written in terms of the great powers of an era," because "the units of greatest capability set the scene of action for others as well as for themselves" (Waltz 1979, 72). Although states may create international norms to mitigate the effects of an anarchic system "the primary foundation of rights and rules is in the power and interests of the dominant...states of the system" (Gilpin 1981, 35). If there are international norms, they are manifestations of the will of the major powers that may or may not feel obliged to conform their behavior to those norms in order to attain their interests. Adherents to the Munich School of Neorealism would argue that it is incorrect to exclude normative considerations like ethics or law from interstate relations because they influence both the behavior of states and the structure of the international political system (Kindermann 1985, 23).

The fifth phase of constellation analysis focuses on causal connections between elements examined in the first four phases that are likely either to produce cooperation or conflict among actors in the international system (Kindermann 1985, 24). The sectoral

analyses conducted in the first four phases should indicate, for example, whether national interests lead to cooperation or vice versa. Unlike Waltz, who judges scant opportunity for interstate cooperation due to the anarchic character of the international system, the Munich School is not so deterministic. Indeed, their analytical construct suggests a much more dynamic interstate process. The final phase of constellation analysis, synopsis, correlates and integrates the results of the analysis conducted in the preceding five phases in order to reveal the totality of interactions within and between actors in the international system (Kindermann 1985, 24).

Kindermann's constellation analysis, while rooted in some standard neorealist propositions, exhibits two important refinements. First, the analysis emphasizes not only the interaction between states, but, unlike standard neorealism, the importance of domestic determinants in interstate behavior (Kindermann 1997). Second, constellation analysis examines an interstate development, for example, within a flow of time. Thus, by examining changes in the constellation analysis between two points in time, one maybe able to ascertain causes and trends not only in states themselves but in interstate relations (Kindermann 1997). In this regard, the Munich School of Neorealism is concerned with dynamic, historical factors whereas Waltzian neorealism is markedly ahistoric.

In a further effort to explore the nexus between domestic and international factors that influence interstate politics, Michael Mastanduno, David A. Lake, and G. John Ikenberry (1989, 458) have suggested that there is more than a relationship between the two levels, they argue that domestic and international politics are interactive.¹¹ These scholars contend that policy formulated "in one arena spills over into the other," because

“governments act at home to meet international challenges and abroad to solve domestic problems, often simultaneously” (Mastanduno, Lake, and Ikenberry 1989, 458). For example, a national government may take steps to bolster the domestic economy in order to mobilize resources for military purposes, but the same government also may undertake activities to ameliorate conflict with an adversary in order to reduce the burden of defense spending on domestic resources.

On the one hand, in clearly Waltzian terms, Mastanduno, Lake, and Ikenberry (1989, 462) state that national governments develop policies to attain their proximate goal of acquiring power and wealth, which are “valued because they provide the means to insure both the state’s survival and to pursue other goals within an anarchic and competitive international system.” Yet, on the other hand, in terms uncharacteristic of standard neorealism, Mastanduno, Lake, and Ikenberry (1989, 463-64) assert that national leaders confront not only an external security dilemma posed by actual or potential threats from other states, but also an internal security dilemma within their own country. In order to retain their political positions, national leaders must respond to challenges and demands from supporters and opponents in ways that often influence how a country conducts its relations with other states.

Generally neorealists explain interstate behavior by reference to the structure of the international political system. However, Mastanduno, Lake, and Ikenberry (1989, 467) have noted that “domestic problems may intrude on international relations in ways that are not understandable in terms of the prevailing character of the international system.” Since national governments “participate in both international and domestic political arenas, it is not surprising that the pursuit of goals in one arena influences

actions in the other” (Mastanduno et al. 1989, 471). States may both respond to international events through domestic initiatives and attempt to resolve domestic issues through activities at the international level (Mastanduno et al. 1989, 471). By taking account of the international as well as the domestic factors that influence interstate behavior, one is able to postulate a more comprehensive and integrated neorealist theory.

A rationale for including domestic-level factors in neorealism is provided by Jennifer Sterling-Folker (1997, 2).¹² In this scholar’s elaboration of Waltz’s theory, the anarchic international political structure serves as “an ongoing causal variable external to the processes in which actors are engaged” (Sterling-Folker 1997, 17). However, the external environment is a background that “can tell us what pressures are exerted and what possibilities are posed by [the international political system], but it cannot tell us just how, and how effectively, the units of a system will respond to those pressures and possibilities” (Waltz 1979, 71). Ultimately, “it is actors within domestic realms and involved in domestic processes who must make the assessments and choices necessary for their own survival” (Sterling-Folker 1997, 17).

The treatment of domestic processes as a means to an end enables their deployment in relation to international politics. Even Waltz acknowledges that “each state arrives at policies and decides on actions according to its own internal processes,” but he accords primacy to the external environment because each state’s “decisions are shaped by the very presence of other states as well as by interactions with them” (Waltz 1979, 65). Sterling-Folker (1997, 19) has refined the neorealist view by arguing that domestic processes are an integral part of a state attaining its interests and ensuring its survival. Because domestic processes are “responsible for the ability of states to emulate

the processes of others” that have been effective in attaining their own national goals, it may be the case that domestic processes are “the final arbiter for state survival within the anarchic environment” (Sterling-Folker 1997, 19).

Moreover, domestic processes also are among the principal impediments to the emulation of successful processes employed by other states (Sterling-Folker 1997, 19). This occurs because domestic groups develop deep attachments to certain processes, even those that may have ceased to perform functions effectively (March and Olsen 1989, 22). Indeed, “identities, interests, and behaviors become tied to process, and it then acts as an opaque filter through which assessments, choice, and judgments are being made regarding the international realm” (Sterling-Folker 1997, 19). Consequently, domestic processes may inhibit objective assessments of interests and choices by national decision makers, and may even act as a barrier to prudent behavior in international politics. The structure of international politics retains importance as a force that shapes and shoves the states, but for Sterling-Folker domestic processes assume a degree of significance not found in standard neorealism.¹³

Sterling-Folker offers that the dual pressures exerted by the international environment and domestic processes can explain, at least to some extent, why decisions made by national leaders may fail to optimize national interests. Domestic actors involved in decision making are “simultaneously attempting to balance interests engendered by both the environment and the domestic processes to which they owe their immediate identities and interests” (Sterling-Folker 1997, 20). Choices “are not selected because they are objectively more rational, but because they make sense to actors given their contexts” (Sterling-Folker 1997, 20). Domestic processes are causal within the

domestic context, but the international context encompasses domestic processes and shapes and shoves them. Yet because domestic processes become embedded over time and generate vested interests, they too influence decision makers' choices intended to cope with the international environment.

Sterling-Folker (1997, 20) has examined Waltz's assertion that states are "like units" performing similar tasks, and she observes that the "environment explains the similarities since it is an unchanging variable that, as the context within which actors and processes exist, exerts the same pressures on all states." However, Sterling-Folker notes that "the impact of domestic process explains why the choices in response to the environment are not identical" (Sterling-Folker 1997, 21). As indicated above, domestic processes can become durable features in societies and act as filters for decision makers' choices; thus, it is not too surprising that states may not engage in perfect emulation of other states' successful domestic processes. Instead, what "occurs is an amalgamation of imitated process with existing domestic process so that each state's response to its environment is similar to others and uniquely its own" (Sterling-Folker 1997, 21).

Sterling-Folker's contribution to neorealism suggests that the theory is not only hospitable to the inclusion of domestic processes, but that neorealism can accord these processes a role not generally recognized by some neorealists. More importantly, by viewing the international environment as primarily but indirectly causal and domestic processes as secondarily but directly causal, Sterling-Folker declares that domestic actors do not "disengage themselves from the processes that created their interests and behaviors" as they strive to attain state interests in an anarchic environment (Sterling-Folker 1997, 22).¹⁴ Rather, domestic processes condition decision makers' choices,

while simultaneously being shaped and shoved in a Waltzian sense by the structure of international politics. Sterling-Folker's perspective illuminates both the necessity for including domestic process considerations in international relations theory, while recognizing the systemic constraints on those processes.

An effort to extend the neorealist framework to include both the system and state levels is provided by Barry Buzan, Charles Jones, and Richard Little. Unlike Waltz, who erects a nearly impermeable barrier between the two levels, they aim for an explicit linkage between the state and system levels to explain international relations more thoroughly. In order to forge this link between the two levels, they adopt a sectoral perspective that includes not only political interaction but economic and societal interactions that mold states and the structure of the international system (Buzan et al. 1993, 12). This approach ameliorates the narrowness of standard neorealism that occurs because not all possible factors that could influence interstate relations are considered. As such, Buzan, Jones, and Little challenge Waltz on several tenets of his theory.

These scholars dispute Waltz's assertion that states in a condition of anarchy must necessarily be functionally undifferentiated. Instead, they argue that states exist in an anarchic international system, but they may be differentiated for various reasons. For example, differentiated states in an anarchic system could be the result of countervailing factors at the state-level, such as occurred in the medieval period when "small, weak units scarcely generated enough interaction in the system to drive the homogenizing logic of socialization and competition with any urgency" (Buzan et al. 1993, 43). Similarly, in contemporary interstate relations other manifestations at the state-level could attenuate Waltzian socialization and competition such that circumstances emerge where countries

are functionally differentiated, although the international system remains anarchic. In short, overstating the influence of anarchy and focusing exclusively on the power relations between states causes some neorealists to conclude that all states will at all times be compelled to provide for their physical security in essentially the same ways.¹⁵

Additionally, Buzan, Jones, and Little contend that Waltz's portrayal of distributed capabilities framed in terms of power is too narrow because "other attributive elements of states could also be cast in distributional terms" (Buzan et al. 1993, 56). From their perspective, "even if power was the most important variable within the distributional tier of structure, that would be a weak reason to exclude other variables..." (Buzan et al. 1993, 56). Overall, the standard neorealist focus on aggregated power is "neither the most logical nor the most effective way to deploy structural theory in an international system context" (Buzan et al. 1993, 56).¹⁶ Aggregation necessarily accumulates a diverse array of state capabilities that may be more appropriately examined as distinct components. Stated differently, aggregating a state's capabilities may enable one to assign labels like "great power" or "lesser power," but it does little to contribute to understanding how states stand in relation to each other on specific measures of capability. Further, comprehending interstate interactions may be accomplished more accurately if measures of capability are examined separately instead of in the aggregate.

Buzan, Jones, and Little (1993, 120) also address how domestic decision makers meet internal challenges that bear on interstate relations. Although national leaders act to ensure the survival of their state in the self-help international system, the internal structures of a state also constrain decision makers' choices. If they are to retain their political positions, national leaders must not only preserve the existence of their state,

they must also act according to influences and demands that emanate from the state's internal structures. Buzan, Jones, and Little note that the existence and influence of states' internal structures are one explanation why states are not the "same," as Waltz asserts. This extension of the neorealist framework suggests a closer examination of how and why domestic structures sometimes prevail over international structure (Buzan et al. 1993, 121).

A further point of disagreement with Waltz concerns the limits on interstate cooperation. In Waltzian neorealism, states act autonomously to ensure their survival and to promote their interests in an anarchic system. States are constrained to cooperate because they fear that cooperating will confer a relative advantage on other states that will be exploited later. It is the fear of exploitation that precludes interstate cooperation. However, Buzan, Jones, and Little (1993, 167) hold that a different outcome is possible. They contend that a mounting, pervasive process of rule formation is leading to a growing sense of international community. States remain sovereign, autonomous actors, but cooperation and mutual gain are not forestalled.¹⁷

Charles L. Glaser (1994/95, 50) also disagrees with the neorealist argument that "predicts that cooperation between adversaries, while not impossible, will be difficult to achieve, and, as a result, will be rare and contribute relatively little to states' well-being." Not only is Glaser more optimistic than most neorealists about the prospects for cooperation among states, he is more optimistic about their ability to avoid armed conflict. Although he begins with standard neorealist assumptions about the international system, he reaches conclusions different from neorealists like Waltz and Mearsheimer. Glaser's reformulation of these assumptions leads him to conclude that the structure of

international politics does not necessarily preclude cooperation among states. Indeed, states can and do recognize the benefits of cooperation, even in a condition of anarchy.¹⁸

The standard neorealist refrain asserts that “the structure of international politics limits the cooperation of states” (Waltz 1979, 106) and that “cooperation takes place in a world that is competitive at its core—one where states have powerful incentives to take advantage of other states” (Mearsheimer 1994/95, 13). Glaser (1994/95, 58) argues that the neorealist emphasis on traditional forms of self-help has created a bias for competition and against cooperation that is unwarranted. Instead, an important, albeit ignored, form of self-help would be if a state persuades a competitor that arms control, for example, is preferable to an arms race. If a state convinces a competitor that its security is improved by an arms control agreement instead of an arms competition, then both states have improved their security through cooperative behavior, although the international political system remains anarchical (Glaser 1994/95, 58).

An important point in Glaser’s (1994/95, 59) critique of the neorealist view of self-help is that self-help alone “tells us essentially nothing about whether states should prefer cooperation or competition.” For example, a state may engage in an arms race with a competitor if its decision makers believe that the security benefits of such a race exceed the benefits of arms control. Alternatively, if a state believes that the costs of an arms race exceed those of arms control, it may propose an arms control agreement that its competitor accepts if it believes the agreement reduces the risks and uncertainties it may associate with an arms race. In short, “under certain conditions *both* countries could prefer...cooperation” (Glaser 1994/95, 59). Moreover, “countries can prefer cooperation even when they are sure that they would not lose an arms race” (Glaser 1994/95, 59). In

this situation, a "country concerned about maintaining its military capabilities could prefer arms control when an arms race would result in advances in weapons technology that, when deployed, would have the unfortunate effect of leaving both countries more vulnerable to attack" (Glaser 1994/95, 59).

Glaser endorses the neorealist argument that uncertainty about other states' intentions creates fertile ground for interstate competition. In neorealist parlance, uncertainty leads to perceptions of insecurity which often leads to interstate arming and conflict. However, uncertainty can also create a motivation to cooperate. If states cooperate to reduce military threats they not only reduce insecurity, they also signal that each is motivated not by a desire to dominate others, but by a desire to survive in an anarchic world. Accordingly, as uncertainty declines, so should insecurity and the potential for violent conflict. By coercion on a tangible level, states can avoid the troublesome and often futile exercise of divining a competitor's intentions, which both Waltz (1979, 105) and Mearsheimer (1994/95, 10) allege interfere with interstate cooperation.

Some neorealists claim that states aim to maximize their power vis-à-vis other states (Mearsheimer 1994/95, 9). Others contend that the principal concern of states is not to maximize their power but to maintain their relative power position in the international political system (Waltz 1979, 126). The specific view of the relationship between states and power may vary somewhat among neorealists, but they agree that states are concerned about the balance of power among states (Mearsheimer 1994/95, 12n27). Glaser (1994/95, 61) argues that the standard neorealist focus on aggregated

power, specifically military power, needs to be reformulated to emphasize components that he calls offense-defense balance and offense-defense distinguishability.

The first component refers to the ratio of offensive-to-defensive forces deployed by competitors. A careful examination of this ratio by competitors could reveal, for example, that each side's forces are deployed for defense, not conquest.¹⁹ In this way, the offense-defense balance is more informative about each side's probable intentions than gross considerations of power, which may skew a state's view of its competitor's possible intentions and cause it to undertake actions that heighten uncertainty and insecurity on both sides. The second component, offense-defense distinguishability, enables states to differentiate between the offensive and defensive capabilities of military forces. If states aim to cooperate in order to preserve their security instead of relying on the methods recommended by neorealists, then deploying military forces with distinguishable defensive capabilities is a preferable route to mutual security among states.

A shift from a neorealist balance of power perspective to a military capabilities approach based on an offense-defense balance and offense-defense distinguishability would enable states to deploy forces adequate to preserve their survival, but no more. By including these components in existing neorealist theory, Glaser (1994/95, 67) does not deviate from its essential elements; rather, he "eliminates distortions that result when the theory is cast primarily in terms of power." Further, by considering the quantity and types of forces that states require to preserve their survival in an anarchic world, states can avoid the cycle of uncertainty and mistrust that frequently leads to arms races or war (Glaser 1994/95, 67).

Insofar as reducing uncertainty and insecurity are concerned, neorealism presents another problem. Since the standard theory poses that the structure of international politics limits "the actions of particular actors to produce desirable outcomes," neorealism precludes the possibility of greater certainty about benign moves and thus greater security because states do not disclose information about their intentions (Waltz 1979, 108). Glaser (1994/95, 68) argues that this aspect of neorealism is flawed, because states "can under certain conditions communicate information about their motives by manipulating their military policies." A state interested only in preserving its security could be inclined to adopt a policy that reveals information about its intentions in an attempt to convince its competitor by word and deed that its motives are benign. Similarly, a duplicitous state would be less inclined to adopt such a policy to dupe a competitor because the costs of disclosure could exceed the benefits of the deception.

Glaser (1994/95, 68) believes that "states can communicate their benign intentions via three types of military policies." First, arms control agreements, especially in an offense-dominant environment or in a situation where offensive and defensive forces are indistinguishable, can be beneficial to the extent that voluntary self-restraint can communicate benign motives. Second, a unilateral shift to defensive forces, particularly in an offense-dominant setting, can reveal that a state's motives are defensive, as reflected in its choice to expend scarce resources to procure defensive forces in lieu of offensive forces. Third, unilateral reductions by a state in its military capabilities would communicate its benign intentions by not only reducing offensive forces, but by accepting the near-term risk that would accompany reducing one's ability to defend against and retaliate for a competitor's aggression (Glaser 1994/95, 68-70).

Standard neorealist theory presumes that states will be severely constrained from cooperating to reduce or to eliminate the security dilemma. Rather than accept uncertainty and insecurity as immutable characteristics of interstate politics, Glaser posits that states can engage under certain circumstances in non-threatening activities to lessen or to obviate the mistrust and conflict that neorealists associate with interstate relations. Instead of an inevitable competition between states, Glaser (1994/95, 89-90) concludes that "states' choices between cooperation and competition are highly conditional, with no general preference for competition." By re-evaluating the standard neorealist bias against cooperation, by re-formulating the power equation to differentiate between offense and defense, and by clarifying ways that states can communicate their intentions, Glaser makes a significant refinement to neorealist theory.

Since the publication of *Theory of international politics*, several scholars have elaborated and refined Waltz's original inquiry. They have not only endeavored to extend the neorealist framework to include the systemic and state levels of analysis, but they have introduced into that framework factors they believe influence interstate behavior. Although some scholars who trace their intellectual heritage to Waltz are more disposed to include factors like principles, norms, rules, and decision making procedures in their work, none has explored thoroughly how these factors are fashioned into structures that facilitate interstate cooperation.²⁰ The next section investigates this subject more closely.

Neoliberal Institutionalism

Despite its contributions to international relations theory, neorealism has been the focus of considerable debate (Buzan et al. 1993, 1). Richard K. Ashley (1984, 228) has

assailed neorealism for being an “ ‘orrery of errors,’ a self-enclosed, self-affirming, joining of statist, utilitarian, positivist, and structuralist commitments.”²¹ His recital against neorealism, notable for its depth, merits repeating.

From realism it learns only an interest in power, from science it takes only an interest in expanding the reach of control, and from this selective borrowing it creates a theoretical perspective that parades the possibility of a rational power that needs never acknowledge the power's limits. What emerges is a positivist structuralism that treats the given order as the natural order, limits rather than expands political discourse, negates or trivializes the significance of variety across time and place, subordinates all practice to an interest in control, bows to the idea of a social power beyond responsibility, and thereby deprives political interaction of those practical capabilities which make social learning and creative change possible. (Ashley 1984, 232)

Ashley applies a withering critique of neorealist structuralism, which he believes reduces international relations to an expression of national interests mediated only by the power that can be wielded by competing states. In sum, he says, neorealists regard international relations as little more than “coaction among dumb, unreflective, technical-rational unities that are barraged and buffeted by...changes they are powerless to control” (Ashley 1984, 260).

Other scholars have leveled similar criticisms against neorealism. Martin Griffiths (1992, 84) has observed that neorealism “is derived from the structure of anarchy and merely assumes that states wish to survive as autonomous entities....”

Neorealism “makes no appeal to internationally accepted rules of the game, state rationality, elite farsightedness, or other ‘reductionist’ errors” (Griffiths 1992, 84).

Although Ashley and Griffiths, *inter alios*, aim their assessments primarily at Kenneth Walt, Robert Gilpin, and John Mearsheimer, their criticism could also apply, albeit to a lesser degree, to those who have endeavored to elaborate and to refine neorealist

thinking, but adhere to its core elements such as the affect of anarchy on state behavior and the role of power in interstate relations.²²

There are other scholars who are less absolute about the shortcomings of neorealism, yet find the theory inadequate. This group acknowledges that neorealism “provides us with a logically coherent theory that establishes the context for state action” (Keohane 1986b, 190-91). Neorealists understand that “a systemic theory of international relations must account for state behavior by examining the constraints and incentives provided by the system...” (Keohane 1986b, 191). These scholars agree with the neorealists that the international political system is state-centric and decentralized, and that the structure of international politics influences interstate behavior (Keohane 1989, 8). Further, they recognize that states are concerned about the relative capabilities and gains of other states vis-à-vis their own security and survival (Keohane 1993, 271).

These scholars, known as neoliberal institutionalists, do not deny that states’ concerns for the capabilities and gains of other states make interstate cooperation difficult, but they contend that concerns about power relationships are a necessary but not sufficient reason for states to fear the relative gains of other states (Keohane 1993, 276).²³ According to neoliberal institutionalists, “relative gains may be important motivating forces for states,...but only when gains in one period alter power relations in another, and when there is some likelihood that subsequent advantages in power may be used against oneself” (Keohane 1993, 275). Unlike Waltz or Mearsheimer, neoliberal institutionalists are concerned with states’ capabilities and intentions.²⁴ As Robert O. Keohane (1993, 276) has put it, “even if asymmetrical gains from cooperation would increase the power of some states, those governments expecting smaller gains than those accruing to their

partners will not ask whether these shifts could be used against them, but how likely this is to happen." If it seems unlikely that states will use changes in national capabilities against other states, then concern for relative gains can decline in significance (Keohane 1993, 276). In short, neoliberal institutionalists assert that "any claims about the impact of relative gains are highly conditional" and do not follow logically from the structure of international politics that neorealists put forward as a necessary *and* sufficient reason for interstate behavior (Keohane 1993, 277).

Neoliberal institutionalists believe that the neorealist view of structure is too narrow (Keohane 1989, 8). Because the neorealists define international structure in terms of states juxtaposed by distributed power capabilities in an anarchic system, they are hard-pressed to explain changes in state behavior unless structural change occurs, which, as Waltz (1979, 70) has suggested, is uncommon given "the recurrent patterns and features of international-political life." Yet history provides examples of changes in the behavior of states that were not preceded or accompanied by structural changes. For the neoliberal institutionalists, power remains an important component in interstate relations, but, like some scholars who have elaborated and refined neorealism, it is neither the only nor the most important factor that influences whether or not states will cooperate.

A principal difference between neoliberal institutionalists and neorealists "lies in their understanding of the nature of state interests" (Martin 1992, 172). The points of convergence and divergence between neoliberal institutionalists and neorealists are drawn by Keohane (1989, 18n20), who has stated that

for situations with little mutual interest--in which international relations would approximate a series of zero-sum games--neoliberal theory's predictions considerably overlap with those of neorealism. Under those conditions, states will be reluctant to cooperate with each other and will

choose less durable rather than more durable arrangements.... The divergence between predictions of the two theories will become apparent only when opportunities for joint gains through cooperation are substantial. Under these conditions, according to neoliberal theory, states' obsessions with relative gains will diminish.

Neoliberal institutionalists predict neither interstate harmony nor the absence of conflict, but they do claim that under certain circumstances states can and do cooperate for mutual gain. According to Keohane (1993, 287), one reason for being skeptical about neorealism's pessimism about interstate cooperation is that the theory "cannot explain variation in patterns of conflict and cooperation among states." Anarchy and self-help are enduring features in international politics, yet interstate cooperation has waxed and waned in ways not explained by neorealism.

Thus an important question in international relations concerns *why* states cooperate. Some scholars argue that neorealism's emphasis on anarchy and self-help "overlooks another central fact about international politics, namely the interdependence of the actors" (Milner 1991, 81-82). Thomas Schelling (1960, 5) has observed that "the ability of one participant to gain his ends is dependent to an important degree on the choices or decisions that the other participant will make." In international politics this means that although states are sovereign, autonomous actors they are linked because attaining their goals depends on the behavior of other states and their perceptions and expectations of other states' behavior (Milner 1991, 83). Oran Young (1969, 726) submitted a similar interpretation, but introduced an additional factor into the concept of state interdependence, which he defined as "the extent to which *events* [emphasis mine] occurring in any given part or within any given component unit of a world system affect (either physically or perceptually) events taking place in each of the other parts or

component units of the system.” The behavior of states and the events that occur within states and in the system itself suggest that the international system should be viewed as a web of interdependencies, not as an oversimplified construct whose constituent units are driven deterministically by anarchy and the quest for power (Milner 1991, 84).

National power remains important, but “complex interdependence implies that we can no longer explain state behavior on the basis of a given international configuration” (Haas 1980, 359).²⁵ Explanations of state behavior predicated on the structures of power presume a constancy of state interests; however, national “goals may change because of developments that have little relation to the structure of international power; and familiar ways of determining the national interest may change with them” (Haas 1980, 359). “Power then still matters, but the extent of its explanatory vitality becomes ambiguous because states are uncertain how much power should be applied to which of several competing interests” (Haas 1980, 359). This view “does not carry the implicit assumption that interdependence is either good or bad, that it contributes to peace by making for contact and communication or to war because it creates opportunities for developing tensions” (Haas 1975, 860). Rather, this outlook suggests clues to analyze *how* states may attempt to manage their interdependence (Haas 1975, 860).

The importance of non-power factors in interstate cooperation has been examined by some scholars using the Prisoner’s Dilemma game. In the simplified version of the game there are two players, and each is assumed to be a rational utility maximizer.²⁶ Each player moves only once per game and selects from one of two choices: cooperate with the other actor or defect (i.e., cheat to maximize one’s own relative gain). Each player must make a choice without knowing what the other player will do. Given the

choices and circumstances, each player is able to maximize his or her payoff by defecting, irrespective of the other actor's choice. However, if both players defect, each receives a lower payoff than if they cooperated, but neither player is motivated to cooperate because cooperation creates the potential to be exploited by the other player. This is the dilemma that players confront, and this is the version of the game that portrays the behavior of states according to standard neorealism: states shun cooperation because they fear dependence on other states for their survival (Waltz 1979, 106).²⁷

In a modified game, players are permitted to communicate in order to make commitments and to issue threats. In this case, a player can make his or her strategy "explicitly contingent on the choices of others, including their willingness to cooperate for mutual gain" (Lipson 1984, 5). Tit-for-Tat is an example of a contingent strategy that applies non-power factors to examine interstate cooperation. A player is presumed to cooperate on his or her initial move. This behavior is either reciprocated for mutual cooperation or betrayed by the other player through defection. Subsequent behavior by the first player is the result of whatever choice the second player makes. If interstate behavior is conducted as a highly iterated interaction, "the extraordinary success of Tit-for-Tat leads to some simple, but powerful advice: practice reciprocity" (Axelrod 1984, 118).

Neorealists like Waltz argue that states are constrained to cooperate because of the anarchic, self-help character of the international system. Instead of cooperation there is competition, usually in the form of military preparedness. However, Charles Lipson (1984, 14) holds that it is the "special peril of defection, not the persistence of anarchy as such, that makes security preparation such a constant concern." Contingent strategies

like Tit-for-Tat “can be remarkably effective in promoting cooperation” and lessen the imperative for states to compete in ways that are mutually detrimental (Axelrod and Keohane 1986, 244). However, Tit-for-Tat is neither a perfect strategy nor does it guarantee cooperation. Several factors militate against reciprocity.

First, cooperation among states can emerge from conditions of interdependence, but such a result requires that states “expect to continue to interact with each other for the indefinite future, and that these expectations of future interaction be given sufficient weight in their calculations” (Keohane 1986b, 196). If high levels of uncertainty persist confidence about expectations will be reduced and could impel governments to discount the future (Keohane 1986b, 196). Not only would such a situation inhibit cooperation through reciprocity, but it would also diminish the capacity of states “to make mutually beneficial agreements at any given time, quite apart from their expectations about whether future interactions will occur” (Keohane 1986b, 196).

Second, a practical problem with contingent strategies like Tit-for Tat is not so much knowing when to cooperate or to defect, but knowing what is actually transpiring (Poundstone 1992, 253). It may not always be unambiguous that state has cooperated or defected, since many actions may fall along a continuum between the two extremes (Poundstone 1992, 253). If a state is unable to ascertain if its partner has cooperated, then using a contingent strategy becomes more difficult. An “echo effect” can compound this problem (Axelrod and Keohane 1986, 245). If a state is unsure about whether a partner has cooperated, it may itself defect and set in motion a series of mutual defections that impede cooperation.

Third, contingent strategies can also shift from cooperation to conflict if states adopt differing views of the relationship. For example, the U.S. envisioned *détente* with the Soviet Union as ushering in an “era of negotiation” wherein each side would restrain its efforts to attain relative gains vis-à-vis the other side (Papp 1994, 166). Yet, from the mid-1970s until the demise of *détente*, U.S. officials periodically accused the Soviets of “breaking the rules of *détente*” because of their involvement in Angola, Ethiopia, and Afghanistan, activities perceived by many Americans as an attempt to achieve gains inimical to U.S. interests (Papp 1994, 246-47). The Soviets countered that “they would support groups they defined as national liberation movements in any way they deemed proper” (Papp 1994, 169-70). Throughout the period cooperation occurred, but the era was also characterized by a series of moves and countermoves by both sides that resembled conflict more than cooperation. Differing views of the relationship permitted each side to claim that the other had deviated from the terms of the agreement, and that it was only giving a tit for tat.

Although contingent strategies can promote cooperation, absent an institutionalized arrangement between states that mitigates conditions that lead to defection, “the high costs of unreciprocated cooperation, together with uncertainty about others’ intentions, fuels suspicion and fosters anxiety...” (Lipson 1984, 15). Under such circumstances, “all interactions with potential adversaries may come to be seen as purely competitive, or may be plausibly depicted that way in political discourse” (Lipson 1984, 15). However, this situation can be ameliorated by the creation and use by states of international institutions that monitor state behavior, provide information to states, and make feasible decentralized enforcement of standards of conduct agreed upon by

institutional partners (Keohane 1988, 386).²⁸ Insofar as international institutions specify the precise meaning of reciprocity (e.g., standards of conduct), provide information about the actual extent of interstate reciprocity, and furnish some mechanism to respond to defectors, they can enable states to cooperate (Axelrod and Keohane 1986, 250).

Nearly four decades ago, the eminent political-philosopher Arnold Wolfers (1962, 19-20) criticized the “billiard ball” model of the international system, a model that many would later associate with neorealism.

By definition, the stage is preempted by a set of states, each in full control of all territory, men, and resources within its boundaries. Every state represents a closed, impermeable, and sovereign unit.... Since this obviously is not an accurate portrait of the real world of international politics, one can say that reality ‘deviates’ in various ways from the model, because corporate bodies other than nation-states play a role on the international stage as coactors with the nation-states. To the extent that these corporate bodies exert influence on the course of international politics, knowledge about them and about the deviations that permit them to operate becomes indispensable to the development of a well-rounded theory.

More recently, two other scholars have acknowledged the wisdom of Wolfers’s insights by noting that although certain “corporate bodies,” namely international institutions, are creations of the states, once established they do formulate rules and norms that states follow. It is this “international rule-making [that] can serve as an important source of...political change” leading to interstate cooperation through institutionalized reciprocity (Rosenau and Durfee 1995, 66). Neoliberal institutionalists argue that a thorough comprehension of world politics requires an understanding that world politics is institutionalized (Keohane 1989, 1).²⁹ That is, much interstate behavior reflects established norms and rules, and the meaning of this behavior can be interpreted according to these norms and rules (Keohane 1989, 1).

Although Waltz (1979, 93) concedes at least a minor role for international institutions ("states are not and never have been the only international actors"), he discounts their significance because international "structures are defined not by all the actors that flourish within them but by the major ones," i.e., states. John Mearsheimer (1994/95, 13) has asserted that "the most powerful states in the system create and shape institutions so that they can maintain their share of world power, or even increase it." Unlike these neorealists, neoliberal institutionalists assign "an important role for international institutions in facilitating cooperative behavior" among states (Martin 1992, 172). These scholars "find that institutions allow states to overcome conflicts of interest to achieve mutual gains" (Martin 1992, 172).

According to Keohane (1989, 2), "patterns of cooperation and discord can be understood only in the context of the institutions that help define the meaning and importance of state action." The neoliberal institutionalists hold that the structure of international politics and the position of rational utility maximizing states in that structure need not lead ineluctably to discord. If states can monitor each other's behavior and they are prepared to cooperate on the condition that others cooperate too, they may be able to modify their behavior to reduce discord. Institutions can help states to cooperate (Keohane 1984, 84). In an anarchic, self-help system states facing the necessity of cooperation and collaboration under conditions of interdependence create institutions to attain their interests through collective action (Keohane 1993, 274).

International institutions "serve state objectives not principally by enforcing rules,...but by facilitating the making and keeping of agreements through the provision of information and reductions in transaction costs" (Keohane 1993, 274).³⁰ Even if

transaction costs remain substantial, states will create and use international institutions to achieve their objectives, at least in some issue-areas, as long as the institutions enable states to attain objectives that are otherwise unattainable or attainable only at a higher cost through unilateral means (Keohane 1993, 274).³¹ Keohane (1993, 274) has summarized the situation.

Cooperation will never be perfect and is intimately associated with discord. Nevertheless, those institutions that succeed in facilitating mutually beneficial cooperation will become valued for the opportunities they provide to states, they will therefore acquire a certain degree of permanence, and their rules will constrain the exercise of power by governments.

International institutions make “a significant difference in conjunction with power realities” (Keohane and Martin 1995, 42). Such institutions can control for the effects of power and national interests; thus “it matters where they exist” (Keohane and Martin 1995, 42).

In cases where distributional problems arise between states, the existence of conflict may make international institutions more important (Keohane and Martin 1995, 45). When states seek a cooperative outcome, they may be unable to reach a mutually acceptable arrangement because there are multiple possible outcomes, each with different distributional implications for states’ interests (Morrow 1994, 388-89). International institutions can highlight especially promising outcomes and mitigate fears of defection, both of which facilitate cooperation (Keohane and Martin 1995, 45). Further, international institutions also can provide information about distributional gains from cooperative ventures, which can be valuable if the relative gains logic is an accurate portrayal of state behavior and is an impediment to interstate cooperation (Keohane and Martin 1995, 45). In sum, by facilitating the settlement of distributional conflicts and “by

assuring states that gains are evenly divided over time," international institutions alleviate several problems associated with uninstitutionalized reciprocity (Keohane and Martin 1995, 45).

Neoliberal institutionalism asserts neither that states will always conform their behavior to the principles and norms of international institutions nor that international institutions always constrain state behavior. It does claim, however, that "the ability of states to communicate and cooperate depends on human-constructed institutions, which vary historically and across issues, in nature (with respect to the policies they incorporate), and in strength (in terms of the degree to which their rules are clearly specified and routinely obeyed)" (Keohane 1989, 2). The international political system remains anarchical, self-help, and state-centric, but for neoliberal institutionalists international institutions assume a significant role in mitigating the effects of these features of world politics, thereby facilitating interstate cooperation.

Among neoliberal institutionalists one form of international institution, the regime, has become especially important in world politics because of "rising levels of interdependence" and the "persistent increases in the number and significance" of this type of institution (Keohane 1993, 272).³² In an early discussion of the concept applied to international relations, John Gerard Ruggie (1975, 569) has referred to international regimes as "sets of mutual expectations, generally agreed-to-rules, regulations, and plans, in accordance with which organizational energies and financial commitments are allocated." Stephen D. Krasner (1983b, 2) has added that international regimes are "sets of implicit or explicit principles, norms, rules, and decision-making procedures around which actors' expectations converge in a given area of international relations." Robert O.

Keohane (1989, 4) offered a more parsimonious definition of regimes as “institutions with explicit rules agreed upon by governments that pertain to particular sets of issues in international relations.”³³ Despite terminological differences, these definitions suggest several features associated with international regimes.

First, regimes are “attitudinal phenomenon” (Puchala and Hopkins 1982, 246). International regimes influence state behavior through principles, norms, and rules, but regimes are also subjective because “they exist primarily as participants’ understandings, expectations or convictions about legitimate, appropriate moral behavior” (Puchala and Hopkins 1982, 246). Second, international regimes include “tenets concerning appropriate procedures for making decisions” (Puchala and Hopkins 1982, 246). Third, an international regime must include “the major principles it upholds...as well as the norms that prescribe orthodox and proscribe deviant behavior” (Puchala and Hopkins 1982, 246-47). Fourth, “each regime has a set of elites who are the practical actors within it” (Puchala and Hopkins 1982, 247). These elites are usually the national governments of the states, but they also may be the organizations or individuals who are parts of the national government (Puchala and Hopkins 1982, 247).

Neorealists like Kenneth Waltz and John Mearsheimer would attribute little, if any, importance to international regimes as influences on state behavior. Even some scholars who have sought to refine and to elaborate neorealism do not assign an important role for institutions such as regimes (Glaser 1994/95, 83-85). These structuralists perceive a world composed of self-serving states operating according to positional relationships defined by power capabilities. The pursuit of state survival and other national interests in an anarchic, self-help system generally resists the notion that

states will submit to principles, norms, rules, and decision making procedures that originate outside their national borders. Neoliberal institutionalists do not dispute all neorealist propositions about international politics, but they argue that under circumstances “involving the failure of individual action to secure Pareto-optimal outcomes,”³⁴ international regimes may have a significant impact even in an anarchic world” (Krasner 1983b, 1-2).³⁵

Arthur A. Stein (1983, 117) has offered that states adhere to regimes not because their choices are circumscribed, but because they forgo independent decision making. This view of state adherence to regimes presumes interdependence and is interest-based in that “the same forces of autonomously calculated self-interest that lie at the root of the anarchic international system also lay the foundation for international regimes as a form of international order” (Stein 1983, 132). That is, “the same forces that lead individuals to bind themselves together to escape the state of nature also lead states to coordinate their actions, even to collaborate with one another” (Stein 1983, 132). Thus there are occasions when states will abandon autonomous decision making for joint decision making (Stein 1983, 132).³⁶

A key argument in this conceptualization of international regimes is that national interests guide whether or not states will adhere to regimes (Stein 1983, 135). The extent of a state’s power in the international system is one of the determinants of its preferences, and the distribution of power among states influences the interaction and the preference orderings of interacting states (Stein 1983, 135). These factors influence the incentives and prospects for states to adhere to international regimes (Stein 1983, 135). However, other factors also influence state preferences and regime adherence (Stein 1983, 136).

For example, the existence of offensive weapons compels all (or nearly all) states to arm themselves to avoid existing "the mercy of their militarily more vigorous neighbors" (Waltz 1979, 102). This choice leaves all concerned with a Pareto-inferior outcome that most would prefer to avoid. The nature of technology, in this case offensive weapons, can alter states' preferences and create incentives to adhere to regimes that ameliorate the security dilemma.

The adherence by states to international regimes does "not lead to the abandonment of national calculations but to a shift in the criteria by which decisions are made" (Stein 1983, 139). International regimes "created to assure...coordination or collaboration can themselves serve to shift decision criteria and thus lead nations to consider others' interests in addition to their own when they make decisions" (Stein 1983, 139). Once states begin to coordinate their behavior to achieve cooperative ends and, "even more so, once they have collaborated, they may become joint-maximizers rather than self-maximizers" (Stein 1983, 139). The institutionalization of cooperation and collaboration through regimes restrains egoistic behavior and leads states to recognize the importance of Pareto-optimal outcomes. States impelled previously by the Waltzian imperative to "Take care of yourself!" can learn to adopt joint gains as a new imperative.

How does such learning occur? Ernst B. Haas observed that interstate cooperation occurs because changing knowledge enables states to define joint gains.³⁷ An issue acquires salience "when the terms of interdependence are questioned by one or more parties concerned..." which usually occurs with the appearance of new knowledge pertaining to the issue (Haas 1980, 363). When this happens, "issues become visible, acquire names and places on agendas, elicit studies, and emerge as recurrent topics of

discussion” both within and between states (Haas 1980, 363). An attempt to resolve an issue inclines states to examine the circumstances of their mutual dependence (Haas 1980, 363). When this examination occurs within regimes, states recognize that these institutionalized frameworks provide a common good that can be managed for mutual gain (Haas 1983, 28). Thus states will adhere to regimes when they learn that “a desired distribution of ‘the goods’ [they seek] cannot come about by way of autonomous action” (Haas 1983, 28).

Robert O. Keohane (1983, 151) has explored states’ adherence to international regimes by reference to microeconomic theory, specifically the theory of market failure, which posits that “problems are attributed not to inadequacies of the actors themselves...but rather to the structure of the system....” International politics is viewed like an imperfect market whose structural deficiencies impede mutually beneficial cooperation among states. International regimes can be used by states to correct these deficiencies and to enable them to surmount “the barriers to more efficient coordination identified by theories of market failure” (Keohane 1983, 151). Keohane’s view is predicated on two crucial assumptions. First, states are presumed to be rational utility maximizers that “display consistent tendencies to adjust to external changes in ways that are calculated to increase the expected value of outcomes to them” (Keohane 1983, 151). Second, international regimes facilitate agreements among states in selected issue-areas (Keohane 1983, 151).

Keohane holds that if any one of three conditions exists, then international regimes are clearly preferred to ad hoc arrangements to devise interstate agreements: there is a lack of a clear legal framework that establishes legal liability for state actions,

information is imperfect, and transaction costs are positive (Keohane 1983, 154).³⁸ In international politics all of these conditions exist: there is no world government that enforces rules, the quality and quantity of information among states vary widely, and transaction costs can be quite high (Keohane 1983, 154). International regimes provide a framework of legal liability, albeit an imperfect one; they improve the quality and quantity of information; and they reduce transaction costs (Keohane 1983, 154). Thus, to the extent that "international regimes can correct...defects in world politics along any of these three dimensions (liability, information, and transaction costs), they may become efficient devices for the achievement of state purposes" (Keohane 1983, 154).

Among the various international regimes that exist, states have been more reluctant to adhere to security than non-security regimes (Jervis 1983, 174).³⁹ At least two reasons may account for this reluctance. Perhaps the most dominant reason concerns the nature of the stakes. If a state defects from a trade regime, for example, the consequences for its partners may be severe, but usually will be confined to economic or social effects that are unlikely to threaten national survival. In the area of military security a state that cooperates with a partner that defects could learn too late that its survival in the near-term is jeopardized. This accounts, at least to some extent, for the belief among some neorealists that states shun cooperation because they fear dependence on others for their survival.

A second reason pertains to the different transparencies of state behavior in security and non-security issue-areas. Using the previous examples, if a state defects from a trade regime, the results may be quite transparent, such as changes in import quotas or tariff rates. This is not to suggest that all deviations from non-security regimes

are entirely unequivocal, but such defections are "usually clearer than analogous military activities," which enables the offended partner to respond in a more timely manner (Jervis 1983, 175). However, the relatively non-transparent activities that a defector from a security regime could undertake to jeopardize its partner can have grave consequences. For example, a defector from a regime that proscribes the production and use of biological weapons could manufacture enough anthrax to destroy a dozen large cities in an easily concealed facility the size of garage in just a few weeks (Utgoff 1993, 29).

The primacy of national survival and the uncertainties involved in national decisions about security often discourage states from participating in security regimes. Leaders responsible for the survival of their states frequently rely on unilateral initiatives to preserve their security. These measures usually entail building or improving arsenals. Other states often perceive these arsenals as a threat to their survival, hence they respond by bolstering their own weapons inventories. Security regimes, "with their call for mutual restraint and limitations on unilateral actions, rarely seem attractive to decision-makers," and as a consequence such regimes are a less prominent aspect of international politics than non-security regimes (Jervis 1983, 176).

Nonetheless, the fact that states participate in security regimes suggests that neorealists overstate the affect of anarchy and understate the potential for states to cooperate (Smith 1987, 272). Interstate cooperation is not tantamount to harmony, nor does it depend on altruism or idealism (Axelrod and Keohane 1986, 226; Keohane 1998, 380). Rather, security cooperation occurs within the framework of regimes when the "costs and risks of individualistic security policies are great enough to provide [states] with incentives to seek security through cooperative means, but the dangers of being

taken by surprise by an aggressor are not so great as to discourage the states from placing reliance on joint measures” (Jervis 1983, 178). Thus the importance of security regimes exists not in their formal legal status, but “in the establishment of stable mutual expectations about others’ patterns of behavior that permit the development of working relationships” (Smith 1987, 273). Regimes can reduce the risk and uncertainty of interstate security cooperation under conditions of anarchy and self-help by augmenting the distribution and accuracy of critical information to states (Smith 1987, 274). Security regimes “can help governments assess others’ reputations by not only providing standards of behavior against which performance can be measured, but also basic information on performance” (Smith 1987, 274).

In sum, neoliberal institutionalism provides convincing arguments about the importance of regimes in general and security regimes in particular. Once regimes are created and states adhere to their principles, norms, rules, and decision making procedures egoistic interests can change. This may happen for several reasons. First, regimes can “alter calculation of [national] interest” (Krasner 1983a, 361). This occurs because regimes “shift decision criteria and thus lead nations to consider others’ interests in addition to their own when they make decisions” (Stein 1983, 139). The criteria that a state employs to calculate how to maximize its interests once it adheres to a regime differ from the criteria that it would have used in the absence of the regime.

Second, regimes alter the definition by states of their national interests. This can occur when regimes increase the distribution and accuracy of information that facilitates new understandings about issues that exist between states. Ernst B. Haas (1983, 57) has observed that national interests are not fixed, they change in response to new information.

Of course, this information has an influence on national interests "only after it has seeped into the consciousness of policymakers and other influential groups and individuals," who define those interests and implement strategies to attain them (Haas 1980, 369). Regimes are more than purveyors of information, they can highlight cause and effect relations that may not have been understood clearly by national leaders (Krasner 1983a, 363). As such, regimes can be instrumental in forging a co-evolution of national consciousness and interstate cooperation (Haas 1983, 24).

Third, regimes can be used to forge linkages among issue-areas, such as economic and security concerns (Mayer 1996, 52). The international nuclear nonproliferation regime illustrates this concept. Following the failure of the 1947 Baruch Plan, which would have placed all nuclear facilities and materials under the control of an international authority, the United States adopted a nonproliferation policy of extreme denial designed to preclude the spread of nuclear materials, technology, and information.⁴⁰ However, policymakers soon learned that the physical and intellectual resources needed to produce nuclear weapons were not an American, British, or Soviet monopoly. The motivation to craft the nuclear nonproliferation regime emerged from this situation and reveals how economic and security issues were linked by regime adherents for mutual benefit (Haas 1980, 371). As part of the bargain to renounce nuclear weapons, countries intent upon acquiring nuclear programs for civil purposes were able to obtain from advanced industrialized states the right to "the fullest possible exchange of equipment, materials, and scientific and technological information for the peaceful uses of atomic energy" (U.S. Arms Control and Disarmament Agency 1990, 100). Thus the nuclear nonproliferation regime linked a security objective of some states, i.e., stemming the spread of nuclear

weapons, with the economic objective of other states, i.e., receiving sophisticated technical assistance at little or no cost for the purpose of national development.

As the preceding discussion reveals, neoliberal institutionalists and neorealists diverge on fundamental propositions about international politics. For several neorealists, the structure of the international system impels states to take actions to enhance their prospects for survival, which generally places them in a nearly irreconcilable conflictual relationship with other states (Grieco 1988, 497-98). Neoliberal institutionalists, who are decidedly more Lockean than Hobbesian, do not deny that states pursue survival, but they see international politics as a mixed-motive interaction where conflict can be mitigated and the potential for mutual gains can be improved by international institutions (Martin 1992, 172). Despite their differences, neoliberal institutionalism and Waltzian neorealism share a similar analytical framework, which has caused some scholars to assert that both theories privilege systemic affects on state actions. These scholars believe that this formulation unduly emphasizes the material over the social dimensions of international politics and the behavioral over cognitive aspects of interstate relations. Such concerns are addressed in the next section.

Constructivism

In the standard neorealist view, states' identities and interests are defined in terms of anarchy and the exigencies created by the self-help nature of the international system. States that do not conform to this logic will be driven from existence. Under such circumstances, "only simple learning or behavioral adaptation is possible; complex learning involved in redefinitions of identity is not" (Wendt 1992, 392). Neoliberal institutionalists are less pessimistic about interstate relations. They argue that by creating

and using international institutions states can mitigate the effects of anarchy and self-help. However, neoliberal theorists generally limit their perspective to institutions, which constrains their view from including an explicit cognitive, intersubjective conception of process.

Constructivists contend that neorealists and neoliberal institutionalists adhere to a three-step paradigm about international politics that is problematic.⁴¹ Peter J. Katzenstein (1996, 14) has described this paradigm.

First, there is the specification of a set of constraints. Then comes the stipulation of a set of actors who are assumed to have certain kinds of interests. Finally, the behavior of the actors is observed, and that behavior is related to the constraining conditions in which these actors, with their assumed interests, find themselves.

For the constructivists, this paradigm, with its emphasis on the physical dimension of international politics, focuses on the instrumental rationality of states and concentrates on decisions and choices, while generally assuming national identities and interests (Katzenstein 1996, 14). Constructivist scholars relax two core assumptions in the paradigm: one neorealist, the other neoliberal (Katzenstein 1996, 16-17). They assert that the structures of international politics are not only material, but also social; that is, constructed by states (Wendt 1995, 71). Constructivists also hold that states' identities are consequential for the definition of national interests (Wendt 1992, 394; Katzenstein 1996, 22). Relaxing core assumptions of the neorealist-neoliberal paradigm may reveal patterns of international politics that have remained hidden from scholars and policymakers.

In one of his many influential books, John Maynard Keynes (1935, 383) commented that "ideas...are more powerful than is commonly understood." Indeed, he

said, "the world is ruled by little else" (Keynes 1935, 383). Alexander Wendt (1995, 74) has observed that for constructivists "ideas always matter, since power and interests do not have effects apart from shared knowledge that constitutes them...." For constructivist theorists "discourse, or how we think and talk about the world, largely shapes practice," because "ideas are the driving force of history" (Mearsheimer 1994/95, 37-38). A fundamental assumption of constructivism is that "our understanding of the world, as well as the intellectual tools used for viewing that world, are not objectively derived, but instead are the result of socially constructed concepts" (Dougherty and Pfaltzgraff 1997, 162). Constructivists suggest that "the 'world is in the eye of the beholder' and then proceed to ask where those interpretations of the world come from and how they influence the behavior of individual and state actors" (Dougherty and Pfaltzgraff 1997, 162).

Constructivists do not contend that the material basis of international politics is unimportant. These scholars recognize that states will undoubtedly continue to acquire physical capabilities to defend their national security and to preserve their survival. However, constructivists argue that "many contemporary students of international politics [continue to] treat the material facts of a nation's existence...as the final arbiters of political outcomes" (Kowert and Legro 1996, 451). Constructivists maintain that norms and identity, *inter alia*, are becoming more salient in the formation of new ideas about international politics (Katzenstein 1996, 2).⁴² They also contend that new ideas about interstate relations will influence and shape views concerning national security.⁴³

The constructivists share several propositions about the international system with neorealists and neoliberal institutionalists. They acknowledge that states are rational, that

they seek to survive, and that they are concerned about the power capabilities of other states (Wendt 1995, 72). Nonetheless, constructivists argue that “self-help and power politics do not follow either logically or causally from anarchy and that if today we find ourselves in a self-help world, this is due to process, not structure” (Wendt 1992, 394). There is “no ‘logic’ of anarchy apart from the practices that create and instantiate one structure of identities and interests rather than another; structure has no existence or causal powers apart from process (Wendt 1992, 395). For constructivists, “self-help and power politics are institutions, not essential features of anarchy” (Wendt 1992, 395).⁴⁴ In other words, “*anarchy is what states make of it*” (Wendt 1992, 395).

According to Wendt (1992, 396-97), “a fundamental principle of constructivist theory is that people act toward objects, including other actors, on the basis of the meanings that the objects have for them.” States “act differently toward enemies than they do toward friends because enemies are threatening and friends are not” (Wendt 1992, 397). Anarchy and the distribution of power in the international political system are insufficient to inform national leaders which states are adversaries and which are friends (Wendt 1992, 397). Despite occupying similar structural positions in the international system, South Korea and North Korea have since 1950 had markedly different meanings for U.S. leaders because of ideational factors (Jepperson, Wendt, and Katzenstein 1996, 34). From a U.S. standpoint, the distribution of power between these two countries has meaning only intersubjectively. How U.S. policymakers perceive the power of each country depends on understandings about these two countries and expectations about how they are likely to use their power (Wendt 1992, 397).

Wendt (1992, 397) has observed that states acquire identities through their participation in collective meanings, such as the one illustrated in the preceding paragraph. Just as individuals have many identities, each of which is inherently relational, so do states. "The commitment to and salience of particular identities vary, but each identity is an inherently social definition of the actor grounded in the theories which actors collectively hold about themselves and one another and which constitute the structure of the social world" (Wendt 1992, 398). Wendt (1992, 398) also maintains that the identities that are formulated endogenously to states as well as endogenously to their interactions constitute the basis for national interests. States "do not have a 'portfolio' of interests that they carry around independent of social context; instead, they define their interests in the process of defining situations" (Wendt 1992, 398).

Thus, armed with this formulation of international politics, it is clear why constructivists claim that self-help is "an institution, one of various structures of identity and interest that may exist under anarchy" (Wendt 1992, 399). Therefore notions of national security "differ in the extent to which and the manner in which the self is identified cognitively with the other" (Wendt 1992, 399). Stated differently, "states can identify their security competitively, individualistically, or cooperatively with other states..." (Chafetz 1993, 137).⁴⁵ Wendt (1992, 400) asserts that it is on this cognitive variation that anarchy and the distribution of power acquire meaning.

If international politics is envisioned as a continuum along which states exist instead of a configuration between them, Wendt's formulation becomes clearer. At one end of the continuum, the "competitive" security system reflects the standard neorealist outlook: states shun cooperation because they fear dependence on others for their

survival. In the middle of the continuum, the "individualistic" security system portrays the neoliberal institutionalist viewpoint: states are still self-regarding about their security, but they are less concerned about relative gains, and they are inclined to create and to use institutions to achieve mutual gains through cooperation (Wendt 1992, 400). In both systems, national security is interest-based, the primary difference being whether security is sought autonomously or jointly.

At the other end of the continuum, the "cooperative" security system is available. Here, "states identify positively with one another so that the security of each is perceived as the responsibility of all" (Wendt 1992, 400). Under a "cooperative" security system, national interests are defined in terms of a community instead of self, and shared norms supplant concerns about power (Wendt 1992, 400-01). In sum, self-help is one form of security arrangement under conditions of anarchy, but it is by no means the only kind.

If self-help is not constitutive of anarchy, then it must emerge causally from processes in which anarchy has only a permissive role (Wendt 1992, 403).

Constructivists, like neorealists and neoliberal institutionalists, presume that states seek to survive and that they possess certain physical capabilities to achieve that goal, but constructivists do not assume that anarchy preconditions states for worst-case outcomes. Rather, constructivists hold that a state will interpret the gestures and intentions of other states with which it interacts to ascertain if they are potential friends or foes. Although interpretive errors are possible, there is no basis to conclude a priori that another state is an enemy, "since it is only through a process of signaling and interpreting that the costs and probabilities of being wrong can be determined" (Wendt 1992, 405). In short, "threats are constructed, not natural" (Wendt 1992, 405).

Wendt (1992, 406) contends that “self-help security systems evolve from cycles of interaction in which each party acts in ways the other feels are threatening to the self, creating expectations that the other is not to be trusted.” Consequently, “competitive... identities are caused by such insecurity; if the other is threatening, the self is forced to ‘mirror’ such behavior in its conception of the self’s relationship to that other” (Wendt 1992, 406-07). Competitive interactions between states are the fertile ground for security dilemmas. However, security dilemmas “are not acts of God; they are effects of practice” (Wendt 1995, 77). If states arm, others will be threatened and will arm themselves, thus creating a security dilemma cast in terms of egoistic national identities and interests (Wendt 1995, 77). Changing the practices that manifested the security dilemma will change the intersubjective knowledge that constitutes the interaction (Wendt 1992, 407). In other words, “identities and interests are relationship-specific, not intrinsic attributes of a ‘portfolio’...” (Wendt 1992, 408-09).

Although constructivists agree that states may be competitive in some relationships and solidary in others, they do not agree entirely on the process of identity- and interest-formation. Scholars like Wendt hold that national identities and interests are defined endogenously to states as well as endogenously to state interactions. Yet other theorists have noted the intriguing possibility that domestic norms may influence national identities and interests (Kowert and Legro 1996, 462-68).⁴⁶ Norms may operate like descriptors that establish an identity for a state (Jepperson et al. 1996, 54). In this instance, norms are constitutive because they “specify actions that will cause relevant others to recognize and validate a particular identity and to respond to it appropriately” (Jepperson et al. 1996, 54). At other times, norms are regulative because “they operate as

standards for the proper enactment or deployment of a defined identity..." (Jepperson et al. 1996, 54). Norms, then, "establish expectations about who the actors will be in a particular environment and about how these particular actors will behave" (Jepperson et al. 1996, 54).

Norms may also shape a state's "interests or preferences in ways that contradict the strategic imperative of the international environment..." (Kowert and Legro 1996, 462). For example, humanitarian interventions to aid suffering refugees fleeing war zones are often based on the " 'do something' syndrome," (Snow 1996, 117), which may be traced more to norms than to rationalist interpretations of state action. Similarly, norms may affect national preferences to expend resources to satisfy domestic needs rather than to procure weapons, although the international system remains anarchic. For instance, a complex interplay of morality and economic considerations weighed heavily in the Swedish decision not to produce nuclear weapons in the 1950s when factors in the strategic environment suggested otherwise (Quester 1973, 123-24; Reiss 1988, 48-50).

Not only can norms affect states' identities and interests, they may influence the way that states connect their preferences to policy choices (Kowert and Legro 1996, 463). Stated differently, "norms shape the instruments or means that states find available and appropriate" (Kowert and Legro 1996, 463). Although a diverse array of instruments may be available for states to secure their preferences, norms may constrain the choices that states make (Kowert and Legro 1996, 463). National identities also exert an influence on the selection and employment of certain means by states. For example, a state that identifies itself as a pacific member of "responsible, civilized" international society and eschews obtaining nuclear weapons by conforming with the nuclear

nonproliferation norm may secure its national policy preferences more readily than a state that adopts a dissimilar identity and balks at the norm (Price and Tannenwald 1996, 142). Rationalist theory cannot explain this behavior because the choice of instruments, e.g., weapons, is driven by the structural imperatives of international politics, not normative influences.⁴⁷ Some scholars have suggested that the slow proliferation of nuclear weapons as well as the reversal of nuclear proliferation in some cases is linked to a global norm that delegitimizes these weapons and the practice of self-help (Price and Tannenwald 1996, 144-45). Norms do not merely parallel structural constraints on state behavior; rather, acceptance of norms is a deliberate, conscious choice reflective of domestic ideas and values.⁴⁸

Although constructivists may disagree about the precise nature of national identity- and interest-formation, they do seem to agree that states can surmount the security dilemmas that they create.⁴⁹ The capacity of states to overcome self-help security systems hinges, at least in part, on "the extent to which and manner in which social identities involve *identification* with the fate of the other..." (Wendt 1994, 386). According to this constructivist perspective, in any given situation it is the nature of identification that determines how the boundaries of self in relation to others are drawn (Wendt 1994, 386). If a state identifies other states negatively, it is more likely to define its interests egoistically in terms of relative gains (Wendt 1994, 386). Alternatively, if a state identifies other states positively, it is more inclined to define its interests coterminously with their welfare (Wendt 1994, 386).

Because of the existence of states' corporate identities, i.e., the qualities that constitute states' individuality, positive identification cannot be absolute (Wendt 1994,

386). However, to the extent that positive identification does exist, it manifests higher social aggregation that increases the willingness and ability of states to resolve security dilemmas. The capacity of states to solve these dilemmas is, for constructivists, not merely an issue of altering the price of cooperation, but a matter of creating new definitions of self in relation to others. Constructivists hold that states do engage in such critical self-reflection, and they make choices based on this assessment that manifest changes in identity and interest (Wendt 1992, 419).

Emanuel Adler, Beverly Crawford, and Jack Donnelly (1991, 28) have described such national self-reassessments in terms of "cognitive evolution": "the process of intellectual innovation and political selection that...becomes the collective description and normative set of understandings of what it takes to advance the nation's power." Cognitive evolution helps to fracture "old ideas and beliefs about the autonomy of [states] in the international arena" (Adler, Crawford, and Donnelly 1991, 28). That is, cognitive evolution leads to a recognition that certain images and interests have become dysfunctional, which makes manifest the necessity for new national identities and redefined interests (Adler et al. 1991, 29). This perspective on cognitive evolution "interprets international politics as a process of diffusion of domestic initiatives and innovations through agenda-setting, strategic interaction, negotiation, and intersubjective processes involving socialization and learning" (Adler 1991, 50).⁵⁰

Adler (1991, 50) has argued that "the sources of collective learning in international relations [are located] at the national level...and that with increasing interdependence and diplomatic, political, economic, and cultural contacts, nations transmit to each other the political innovations that have been selectively retained at the

national level.” Adler (1991, 50) also has observed that “once values and expectations that affect concepts and understandings in international relations are shared, they help to condition or structure international relations.” This interpretation of interstate relations evokes the two-level game depiction of international politics described by Robert D. Putnam (1988, 434).

At the national level, domestic groups pursue their interests by pressuring the government to adopt favorable policies, and politicians seek power by constructing coalitions among these groups. At the international level, national governments seek to maximize their ability to satisfy domestic pressures, while minimizing the adverse consequences of foreign developments.

Fundamentally, then, national political leaders are “constantly playing in the domestic and international arenas simultaneously” and “they are trying to achieve their goals using these two arenas, and they face different--simultaneously contradictory--pressures and constraints from each” (Milner 1997, 4).

Adler (1991, 51) has added to the concept of two-level games that they “are not only about...interests and power, but about the selection, retention, and spread of expectations and values at the national and international levels.” Therefore the domestic game concerns “how expectations and values enter into the political process through the active participation of political groups with a stake in them, and how through the political process...these ideas help to define the national interest, which then becomes a conceptual and normative input to the international game” (Adler 1991, 51). At the international level, “governments not only act out of concern for the domestic political environment, but also are motivated by solutions...to problems, solutions whose interpretations and meanings are embedded in national interest” (Adler 1991, 51). “As part of this game, governments transmit expectations and values that compete to become

the basis of international behavior” (Adler 1991, 51). For Adler and other constructivists, neorealist and neoliberal explanations of international politics retain relevance, but attention must also be accorded to the “processes by which political innovations demonstrate their validity as solutions to domestic and international problems” (Adler 1991, 51).

Learning occurs when policymakers adopt new interpretations of reality that are created and introduced into the political system by individuals or groups (Adler 1991, 51). Policymakers who assimilate new interpretations of reality are more likely to consider changes to national interest and to contemplate new courses of action (Adler 1991, 52). Learning both “increases the capacity and motivation to understand competing alternatives to a currently entertained inference and becomes a creative process by which alternatives and preferences or ‘interests’ are generated” (Adler 1991, 52). According to Adler (1991, 52), “the capacity to generate new cognitions is related not only to the acquisition of new information about the environment but also to new and innovative ways of drawing linkages between causes and effects and between means and ends.”

Adler’s concept of learning parallels Karl Popper’s (1972, 340-61) “searchlight theory,” which explicitly rejects the so-called “bucket theory.” The latter posits that most learning occurs through the entry of external experience into human senses, so that knowledge is simply information poured into the bucket of the human mind. Both Popper and Adler dismiss the notion, suggesting instead that experience is secondary to the “theories and hypotheses that people already have in their minds” (Adler 1991, 52). For learning to occur humans must change not only their existing knowledge, but also the

theories and hypotheses that “color, inform, and even determine the kind of observations and anticipations we make” (Adler 1991, 52). In the absence of a reevaluation of prevailing theories and hypotheses that inhabit human minds, the barriers that impede the application of lessons from experience may infringe on knowledge and prevent it from having much influence (Adler 1991, 53).

As Wendt (1995, 74) has noted, for constructivists, “ideas always matter, since power and interests do not have effects apart from shared knowledge that constitutes them as such.” Most constructivists “do not see ideas and discourses forming at the grass roots and then percolating up to the elites of society” (Mearsheimer 1994/95, 41). Rather, networks of knowledge-based experts play an important role “in articulating the cause-and-effect relationships of complex problems, helping states identify their interests, framing issues for collective debate, proposing specific policies, and identifying salient points for negotiations” (Haas 1992, 2). These epistemic communities are essential to ensure that the knowledge necessary to form new patterns of behavior that shape interstate relations seeps into the consciousness of policymakers and other influential individuals, which is a crucial aspect of the reevaluation of prevailing theories and hypotheses discussed by Adler and others (Haas 1980, 369).⁵¹

Peter M. Haas (1992, 2) contends that “how states identify their interests and recognize the latitude for actions deemed appropriate in specific issue-areas of policymaking are functions of the manner in which the problems are understood by the policymakers or are represented by those to whom they turn for advice under conditions of uncertainty.” In international relations the uncertainties that stimulate demands for information usually arise from interdependence and situations “which involve multiple

and only partly estimable consequences of action" (Haas 1992, 4). This uncertainty leads to demands for specific kinds of information that are the products of "human interpretations of social and physical phenomena" (Haas 1992, 2). Many constructivists envision epistemic communities as a source of this type of information.⁵² Epistemic communities, whose advice to policymakers is informed by their own worldview, "become strong actors at the national and transnational level as decision makers solicit their information and delegate responsibility to them" (Haas 1992, 4).⁵³

Although epistemic communities normally appear and direct their efforts toward policy in a single country, transnational epistemic communities may also emerge. Whenever collaboration binds together actors in different countries with common policy agendas, this suggests that a transnational epistemic community may have emerged (Haas 1992, 17). The members of "transnational epistemic communities can influence state interests either by directly identifying them for decision makers or by illuminating the salient dimensions of an issue from which the decision makers may then deduce their interests" (Haas 1992, 4). "The decision makers in one state may, in turn, influence the [decision makers] of other states, thereby increasing the likelihood of convergent state behavior and international policy coordination, informed by the causal beliefs and policy preferences of the epistemic community" (Haas 1992, 4). The ideas of a transnational epistemic community may also take hold in a national organization from which they may be diffused to other states by actors who have been influenced by them (Haas 1992, 17).

The increasing complexity of an ever-widening range of issues on the international agenda frequently confronts national policymakers with severe uncertainties (Haas 1992, 12). Decision makers obliged to deal with issues of greater complexity and

diversity than they have been historically accustomed rely increasingly on specialists to “ameliorate the uncertainties and help them understand the current issues and anticipate future trends” (Haas 1992, 12-13). Information about specific issues may be better than ever before, but the linkages between issues are more intricate and the ramifications of misunderstanding and poor policymaking are potentially more serious. In short, as scholars such as Robert Putnam and Helen Milner have noted, the domestic and international agendas have become linked, perhaps inextricably, but national leaders often seem unable to comprehend and to cope with these linkages (Haas 1992, 13).

Given the complexity of modern interstate issues and the linkages between the domestic and international levels, national leaders face conditions of uncertainty. Under such circumstances national policymakers must either make decisions without an adequate understanding of complex situations that confront them or they must make choices without sufficient awareness of the expected outcomes associated with different courses of action (Haas 1992, 13-14). That this situation is an accurate portrayal of contemporary global politics, it “undermines the utility of many conventional approaches to international relations, which presume that a state’s self-interests are clear and that the ways in which its interests may be most efficaciously pursued are equally clear” (Haas 1992, 14). Since national policymakers do not always recognize that their understanding of complex issues and domestic-international linkages is inadequate, institutional inertia and habit usually dominant their choices (Haas 1992, 14).

Under conditions of uncertainty, especially when a crisis or shock occurs, national policymakers have incentives to seek information and advice from epistemic communities, who “can elucidate the cause-and-effect relationships and provide advice

about the likely results of various courses of action" (Haas 1992, 15).⁵⁴ Further, "epistemic communities can shed light on the nature of the complex interlinkages between issues and the chain of events that might proceed from failure to take action or from instituting a particular policy" (Haas 1992, 15). Information and advice are crucial for policy choices, particularly when a problem in one issue-area may have unanticipated consequences in other areas (Haas 1992, 15). By helping to formulate policies, "including the introduction of policy alternatives, the selection of policies, and the building of national and international coalitions in support of the policies," members of epistemic communities can help to redefine national identities and interests that may lead to new patterns of interaction with other states (Haas 1992, 16).

The process of policy evolution in which epistemic communities can be instrumental participants involves four principal elements. First, the ways in which national leaders conceive state interests, define and pursue policy objectives, and conduct policy coordination depends on how they perceive the context in which these activities occur (Adler and Haas 1992, 375). By framing the context of an issue in which new ideas and information are introduced and interpreted, epistemic communities contribute to policy innovation by bounding the range of discourse and guide policymakers in ways that clarify issues and resolve problems (Adler and Haas 1992, 375). Framing also creates an atmosphere that facilitates acceptance of ideas and information advocated by epistemic communities (Adler and Haas 1992, 375). Through their participation in policy innovation, epistemic communities have a direct influence on the redefinition of national interests, because of the reliance that policymakers unfamiliar with complex issues and problems place on the ideas and knowledge of these communities (Adler and Haas 1992,

377). As policy innovation proceeds, the presence of epistemic communities may be less conspicuous, but their influence persists as their beliefs become embedded in the consciousness of policymakers.

Second, the influence of epistemic communities is not limited to the domestic level, because through policy diffusion their influence may also extend to the international level. Epistemic communities can influence national policymakers, who, in turn, may also influence national leaders in other countries (Haas 1992, 4). These communities can also influence national legislatures, government bureaucracies, and other organizations that influence their foreign counterparts (Adler and Haas 1992, 379). Additionally, epistemic communities in one country may influence epistemic communities in other countries, who introduce new ideas and information to their own national policymakers (Adler and Haas 1992, 378). Whether learning occurs jointly, when "two or more societies learn simultaneously," or interactively, when "one society learns from another," there are various paths and methods for epistemic communities to diffuse ideas and information that affect the potential for convergence of national interests in issue-areas (Legvold 1988, 121).

Third, the extent of an epistemic community's role in policy selection generally involves two factors: the comfort zone of decision makers and the timing of policy choice (Adler and Haas 1992, 381-83). If policymakers are unfamiliar with or uncertain about issues or problems, they are more likely to seek the assistance of epistemic communities (Adler and Haas 1992, 381). Conversely, if decision makers are familiar with an issue or problem they may be less inclined to seek the participation of epistemic communities in policy selection. Even if national leaders solicit the advice of epistemic communities to

legitimize their policies, these communities nonetheless may be able to introduce such leaders to ideas that influence policies later (Adler and Haas 1992, 381-82). Finally, the “ability of epistemic communities to nudge decision makers into new patterns of behavior [is] also dependent on timing” (Adler and Haas 1992, 383). It may be much easier for national leaders to accept advice and ideas from epistemic communities after political, military, or economic conditions have changed or a crisis has occurred to convince policymakers that the costs and risks of new approaches are less than continuing to use existing practices (Adler and Haas 1992, 383).

Fourth, changed economic, military, or political circumstances, as well as crises and shocks, often precipitate the search for new solutions. To the extent that there is consensus within an epistemic community about advocating new ideas and if new practices adopted by national decision makers yield desirable outcomes, the policy role of the community will persist (Adler and Haas 1992, 384-85). New ideas and information, once incorporated into national policies, can acquire the status of orthodoxy (Adler and Haas 1992, 384). Emanuel Adler (1992, 106) has pointed out that in the area of arms control, for example, epistemic communities have affected “international political processes and outcomes by binding present and future decision makers to a set of concepts and meanings that amount to a new interpretation of reality....”

Adler and Peter M. Haas (1992, 385) have argued that the sources of learning in international relations “can be found in the evolutionary processes characterized by the diffusion, selection, and persistence of political innovations.” This suggests that national policymakers absorb new meanings and interpretations of reality that are often generated by epistemic communities. Learning by national leaders entails more than the

transmission of information, it means that policymakers must embrace new and innovative ways to settle issues and to solve problems. Indeed, information is only secondary to the theories and hypotheses that people possess and use to organize and to interpret information (Adler 1991, 52).

In international relations, the capacity of interacting groups “in *different* countries to learn, share norms and practices, and effectively modify their behavior depends on the diffusion of cause-and-effect understandings from country to country” (Adler and Haas 1992, 386). The import of these understandings does not derive solely from being true, but also in being shared (Adler and Haas 1992, 386). The coordination of expectations and the choice of appropriate practices to employ in areas of mutual concern among countries can occur when states communicate the cognitive content of their causal models and values, and their interpretation of historical experience (Adler and Haas 1992, 386). “Rationality thus rests on transferred meaning and experience and should be analyzed in terms of shared practical understandings, theories, and expectations that reflect policymakers’ current agendas of priorities” (Adler and Haas 1992, 386). Charles Reynolds (1989, 263) has argued that such “practical reasoning is not made in a void but in a world of states whose politics are, partly at least, a product of shared assumptions, constraints, and expectations of proper action.”

In contrast to the constructivists, Waltzian neorealists and neoliberal institutionalists hold relatively spare views of international politics (Katzenstein 1996, 25). The constructivists emphasize the social and cognitive aspects of international relations over the physical and behavioral features stressed by Waltzian neorealists and neoliberals. Constructivists do not dispute all neorealist or neoliberal propositions, but they assert the

importance of intersubjective process over rationalist elements in international politics.

For constructivists, the structures of international relations are social constructs, and they shape states' identities and interests, not just their behavior. In sum, although standard neorealism and neoliberal institutionalism are serviceable theories under certain circumstances, each tends to overlook factors that constructivists contend shape national policies and influence international relations.

CHAPTER III

CASE STUDIES: ARGENTINA, BRAZIL, AND NORTH KOREA

As indicated in Chapter I, seven countries were chosen for examination in this study using the structured, focused comparison methodology. The countries were selected because they constitute the population, not just a sample, of states that either relinquished nuclear weapons or abandoned programs that could produce such weapons. Argentina, Brazil, and North Korea are the countries that discontinued programs with nuclear weapons potential, and South Africa, Belarus, Kazakhstan, and Ukraine are states that relinquished nuclear weapons. Argentina, Brazil, and North Korea are examined in this chapter.

The case studies are divided into three principal sections: Approaching the Brink, Reversing Course, and Returning from the Brink. Approaching the Brink provides information on the genesis, motivations, technical infrastructure, and other pertinent aspects underlying the pursuit of nuclear weapons. Reversing Course discusses the factors leading to each country's decision to restrain its nuclear weapons ambitions. Returning from the Brink examines national decisions to abandon a nuclear weapons capability. In this chapter, a part of the examination is merged to preclude a disjointed analysis. Argentina and Brazil are considered together in Reversing Course, since decisions and actions in one country influenced decisions and actions in the other.

Approaching the Brink: Argentina

Genesis and Motivations

The Argentine nuclear program can be traced to the immediate post-World War Two period as a manifestation of President Juan D. Perón's search for continental leadership and prestige through a demonstration of technological prowess (Spector 1990, 223-24). In the late 1940s, an itinerant Austrian physicist, Ronald Richter, formerly employed in the Third Reich's nuclear program, arrived in Argentina. Richter convinced Perón that he could vault Argentina to the forefront of nuclear technology and at less cost than the investments made by the United States and Soviet Union (Poneman 1987, 174-75). Subsequently, Perón installed Richter as the director of a research facility on Huemel Island in northern Patagonia (Poneman 1987, 175). In 1951, Perón surprised the world when he announced that Richter had achieved a controlled fusion reaction.¹ Leading physicists globally discounted the claim, which caused Perón to recoil and to denounce the skeptics. However, in 1952, Richter was exposed as a fraud, and he and his staff were dismissed and the Huemel facility was dismantled (Poneman 1987, 175).

Despite Richter squandering nearly \$70 million, the affair had a positive effect on Argentina's nuclear program (Poneman 1987, 175). Following the incident, the program was entrusted to the National Atomic Energy Commission (CNEA), which was controlled by the navy. Under the leadership of its first and second directors, Pedro Iraolagoitia and Oscar Quihillalt, CNEA hired competent scientists, developed a high-quality management team, and insulated both groups from the vagaries of Argentine politics through a succession of governments (Poneman 1987, 176). Unlike many

Argentine bureaucracies, CNEA demonstrated remarkable continuity following Perón's ouster in 1955.

At least two reasons account for this outcome. First, CNEA was placed under the military, which experienced more institutional stability than most Argentine government organizations (Waisman 1975, 283). In turn, this translated into greater stability for CNEA. Second, the attainment of goals associated with programs that consume enormous fiscal resources, tap precious human talent, and become closely identified with national pride require a level of planning and coordination unnecessary in other projects (Waisman 1975, 283). To illustrate this point, Albert O. Hirschman (1958, 144) has pointed out that

[w]hen a government undertakes the construction of a large hydroelectric station or of a steel mill, it simply cannot afford to let such ventures go wrong--it places itself under a far stronger compulsion to 'deliver' than if it were to spend the same funds on a large number of small projects. The large ventures are therefore likely to be planned much more carefully than the small ones....

If, as Hirschman suggested, the need to "deliver" exists in the construction of a hydroelectric plant or a steel mill, then it probably becomes imperative in a program with greater scope and expense, such as nuclear energy. Thus protecting CNEA from the vicissitudes of Argentine politics became a prerequisite for success. From the 1950s until 1983, when popularly-elected President Raúl Alfonsín cut budgets, CNEA directors, all from the Argentine Navy, established the agency's budget as nearly sacrosanct and shielded the organization from encroachments by other bureaucracies. These actions had the effects of creating autonomy and greater stability for CNEA, which manifested a series of successes that Argentina's presidents were loath to disrupt by meddling (Poneman 1987, 176).

Throughout its history, three motivations impelled the Argentine nuclear program. First, as noted earlier, the program was initially grounded in the political motives of the country's senior leaders, primarily the search for prestige. Indeed, in its earliest stages a nuclear program may be able to offer its sponsors little more than national pride (Poneman 1984, 856). Even later, as economic recession and mounting foreign debt caused Argentine officials to adopt austerity programs, the political status that some felt accrued to the country from the nuclear program led to continued funding for two nuclear power stations and a heavy water plant.² Much to the delight of Argentine leaders who supported the program amid doubts about its advisability given economic exigencies, Argentina became a nuclear supplier state in the late 1970s when it sold a research reactor and associated facilities to Peru (Poneman 1984, 857). Later, Argentina negotiated similar deals with Colombia and Uruguay. A clear expression of the national pride that Argentina's leaders garnered from their commitment to the nuclear program was offered in the early 1980s when CNEA's director, Carlos Castro Madero, noted at a meeting of the Nuclear Suppliers Group that it was "a distinction conferred upon Argentina, by inviting us to participate along with advanced countries such as France, England, Russia, the U.S., and Japan" (Poneman 1984, 858).³

The economics of national development was another motivation for the Argentine nuclear program. Heavy reliance on imported energy resources in the nineteenth and early twentieth centuries raised concerns about dependence on foreign-supplied fuels for economic development. Argentina has substantial oil reserves, but until the mid-1960s a combination of government policies and bureaucratic mismanagement caused oil production to lag (Poneman 1984, 861). Nuclear energy as a source of electricity figured

as a crucial component in Argentina's economic development strategy. Equally important, as spin-offs from the nuclear program, engineering and construction skills learned from building the nuclear infrastructure could be applied elsewhere to bolster development (Poneman 1984, 861). Further, technologies developed for the nuclear industry could be used in other sectors of the economy to boost growth (Poneman 1984, 861).

The third motivation for Argentina's nuclear program was rooted in national security. Argentina had relatively limited disputes with its neighbors, but its primary security focus was Brazil, whose larger population, rapid modernization, and nuclear program evoked concern in some circles. Historically, the Argentine-Brazilian rivalry was generally confined to economic and political issues (Courtney 1980, 241). Political tensions between the two countries were grounded in Perón's vision of unity among Latin America's Spanish-speaking peoples and in Argentina's pursuit of regional leadership (Courtney 1980, 253). Also, given its longer tradition of resisting foreign influence in Latin America, Argentina was suspicious of the ties between the U.S and Brazil, which some Argentines described as the *pais llave* ("key country") of American influence on the continent (Waisman 1975, 286). The economic contest stemmed from Argentine and Brazilian competition for regional raw materials, energy, and markets.

The Argentine-Brazilian rivalry exhibited few features to suggest serious military tensions existed. Indeed, the last occasion for military hostilities between them occurred in 1828 (Sagan 1996/97, 61). However, several aspects of the relationship did contribute to zero-sum thinking among both countries' leaders (Reiss 1995a, 53). First, a lingering dispute over the exploitation of the fertile Río de la Plata basin was intensified by the

construction of a hydroelectric plant at Itaipu on the Río Paraná, whose Brazilian headwaters flow into Argentina (Courtney 1980, 253; Reiss 1995a, 53). Second, Brazil's rapid development and ties to the United States created suspicions among some Argentine political and military leaders. Third, the emergence of the Brazilian nuclear program provided a rationale for Argentines who advocated retention of a nuclear weapons option as a hedge against possible actions inimical to Argentine interests by the military government of Brazil.

Argentina's nuclear infrastructure as well as its refusal to sign the Treaty of Tlatelolco and the NPT suggested to many observers that the country's leaders would steadfastly preserve a nuclear weapons option (Courtney 1980, 242; Milenky 1978, 35; Redick 1975, 420; Waisman 1975, 283).⁴ Public statements by Argentine officials about the peaceful character of the nuclear program seemed inconsistent with the country's deeds. Given this discrepancy, the fear, both regionally and internationally, was that Argentina's peaceful policies could be discarded, technologies could be diverted from civil programs to military applications, and peaceful nuclear explosives could be configured into weapons (Poneman 1984, 859). Together, Argentina's technological capabilities and its policy position on the nonproliferation regime suggested an "earnest...interest in a nuclear weapons option" (Poneman 1984, 860).

Technical Infrastructure

Argentina possesses the oldest and most sophisticated nuclear energy program in Latin America (Reiss 1995a, 46). Among its achievements, Argentina operated the continent's first research reactor, first electric power reactor, first nuclear fuel fabrication facility, and the first plutonium extraction plant (Poneman 1984, 857). From the outset,

the maxim that guided the program was "import when necessary; build when possible" (Poneman 1984, 862). Ashok Kapur (1979, 333) has offered that Argentina's view reflected the difference between "self-reliance" and "self-sufficiency." The latter refers to the "absence of a need to import foreign technology; the former implies a capacity to manage the imports in such a manner that technology transfer is not accompanied by a loss of control of the decision-making apparatus concerning use of the technology" (Kapur 1979, 333). Argentine policymakers emphasized self-reliance when self-sufficiency was not possible.

In 1960, Argentina contracted to purchase its first nuclear power reactor, known as Atucha I, from the West German firm Siemens A.G. (Redick 1975, 418). Although U.S. companies offered less costly reactors with a better performance record, the Siemens reactor was fueled with natural uranium rather than the enriched uranium used in the American systems. The purchase of the German reactor signaled Argentina's intention to rely as much as possible on indigenous deposits of natural uranium instead of enriched uranium from foreign suppliers. Clearly, at this early stage in its nuclear program, the Argentine government was less concerned about financial cost than in insulating the program from possible external influence in the form of interruptions of fuel supplies (Poneman 1984, 864). Moreover, using natural uranium in nuclear reactors produces plutonium as a by-product material that can be extracted from spent fuel and configured for use in nuclear weapons (Redick 1975, 418).

In 1973, the Argentine government contracted with Atomic Energy of Canada (AECL) to purchase a reactor to be built at Embalse to produce electricity for the city of Córdoba (Poneman 1984, 862; Reiss 1995a, 46). In addition to including a natural

uranium reactor the deal was attractive to Argentina for two other reasons. First, the reactor core consisted of many pressure tubes instead of a single large pressure vessel, which requires high-quality seamless welding (Poneman 1984, 863). The Argentines apparently believed that they could learn to manufacture the pressure tubes sooner and more easily than they could master production of the pressure vessel. Second, and importantly, AECL included in the deal a technology transfer agreement that would have enabled CNEA to develop nuclear reactors without foreign assistance (Poneman 1984, 863).

Following the detonation in 1974 by India of a nuclear device that employed plutonium produced in the Canadian-supplied Cirus reactor, which also used heavy water provided by the United States, AECL terminated its technology transfer agreement with Argentina and insisted on additional nondiversion safeguards at Embalse (Poneman 1984, 863). Further, because the United States and Canada believed that India had deviated from the intent of its agreement not to use material produced by the Cirus reactor for *any* type of explosive, nuclear supplier states soon introduced comprehensive safeguards as a condition for future sales (Reiss 1995a, 46; Spector 1990, 318n5). As a consequence of these circumstances, the Argentine government initially confronted formidable obstacles to its announcement in 1976 to purchase a third nuclear power reactor and a heavy water production facility (Reiss 1995a, 46). Although Argentina had achieved fuel-source independence by relying on domestic supplies of natural uranium, complete fuel cycle autonomy necessitated the construction of a heavy water plant, planned to be located at Arroyito (Spector 1990, 239).

Due to its experience with Siemens at Atucha I and because of Argentine disgruntlement with the Canadians arising from technical problems at Embalse and, most importantly, cancellation of the technology transfer agreement, the West Germans were likely candidates to receive the contract for the third reactor project, known as Atucha II, and perhaps the heavy water facility (Redick 1981, 119). Bonn indicated that it would require comprehensive safeguards only if the reactor and heavy water plant were both purchased from West Germany (Reiss 1995a, 46). In order to avoid full-scope safeguards, the Argentines opted to divide the reactor and heavy water plant purchases between two countries. The West Germans received the contract for Atucha II, and a Swiss firm, Sulzer Brothers, was chosen for the Arroyito facility, which was expected to produce 250 metric tons of heavy water annually (Reiss 1995a, 46-47; Spector 1990, 239).

In 1978, the Argentine government announced its intention to construct a spent fuel reprocessing facility at Ezeiza (Reiss 1995a, 47). CNEA officials contended that plutonium extraction from spent fuel was necessary for three reasons. First, recycling plutonium in Argentina's existing reactors would reduce the requirement for uranium by 50 percent (Poneman 1984, 865). Second, CNEA director Castro Madero asserted that plutonium production was an integral element in developing breeder reactor technology (Poneman 1984, 865).⁵ Third, Castro Madero argued that in order to be competitive with other nuclear suppliers Argentina needed to develop similar skills, including plutonium recovery (Poneman 1984, 865).

Given Argentina's pursuit of nuclear independence these arguments contained a modicum of validity, but they also harbored serious weaknesses. First, Argentina's

uranium deposits and its use of the natural uranium/heavy water fuel cycle militated against the more costly enterprise of plutonium extraction for reactor fuel. Second, the global availability of uranium ore made the uranium fuel cycle cheaper than the plutonium cycle (Poneman 1984, 865). Third, experts did not envision breeder reactors as viable energy sources for most countries, including Argentina, for decades (Poneman 1984, 865). Fourth, breeder reactors were suspected and later shown to be an uneconomical technology (Gardner 1994, 111). Given these considerations, it is not surprising that the nonproliferation community expressed serious reservations about the purposes to be served by the Ezeiza extraction plant--a facility, which at full operational capacity, could produce enough plutonium annually for two or three nuclear devices (Milhollin and Weeks 1991, 27).

Also in the late 1970s, the Argentines began the clandestine construction of an unsafeguarded gaseous diffusion plant at Pilcaniyeu (Reiss 1995a, 47). At this facility uranium hexafluoride gas would be processed through porous membranes to separate the fissionable isotope uranium-235 (U-235) from the nearly unfissionable uranium-238 (U-238) (Milhollin and Weeks 1991, 27). The apparent motivations for the Argentine decision to build this plant were an earlier announcement by the United States to halt sales of enriched fuel for Argentina's research reactors and Brazil's purchase of a complete nuclear fuel cycle from West Germany (Reiss 1995a, 47). When CNEA director Castro Madero disclosed publicly in late 1983 that Argentina had demonstrated the technology for uranium enrichment, he pointed out that the Pilcaniyeu facility was designed to produce uranium enriched to only 20 percent U-235 (Reiss 1995a, 47).⁶

Nonetheless, two features of Castro Madero's statement evoked immediate concern in the nonproliferation community. First, the disclosure that Argentina had enriched uranium suggested that it could eventually produce weapons-grade material. If the plant had attained full operating capacity, it could have produced enough enriched uranium for about four nuclear devices annually (Milhollin and Weeks 1991, 27). Second, the elaborate precautions taken by the Argentines to conceal the Pilçaniyeu facility heightened suspicions about Argentina's intentions. Argentine officials claimed that their actions were intended to preclude a cessation of Canadian work at Embalse, which was still incomplete when construction began at Pilçaniyeu (Reiss 1995a, 47). However, the conclusion reached by the nuclear nonproliferation community was that Argentina's covert effort at Pilçaniyeu implied a role for the facility in a nuclear weapons program.

Despite the progress achieved by Argentina in the nuclear field, the program suffered several disabling setbacks. Maintenance problems at the Atucha I and Embalse reactors caused the power stations to operate sporadically (Reiss 1995a, 56). The Atucha II power station and the Arroyito plant encountered funding constraints that delayed construction (Reiss 1995a, 56; Spector 1990, 231). Plans for four more nuclear power stations were cancelled (Reiss 1995a, 56). In 1990, construction at the Ezeiza plutonium extraction facility was postponed indefinitely (Milhollin and Weeks 1991, 27; Spector 1990, 232). Finally, the Pilçaniyeu facility experienced technical problems and funding shortfalls that led at least one expert to doubt if the plant could ever produce weapons-grade uranium (Reiss 1995a, 56).

Position on the Nonproliferation Regime

Argentine objections to the nuclear nonproliferation regime focused on the Treaty of Tlatelolco and the NPT. Although Argentina signed the Treaty of Tlatelolco in 1967, a series of events and issues in the country precluded treaty ratification (Reiss 1995a, 64). Unlike the position it adopted later regarding the NPT, the Argentine government never contended that the Treaty of Tlatelolco was discriminatory, because it imposed commitments on both nuclear- and non-nuclear weapons states (Aja Espil 1985, 76). The Argentines expressed several reservations about the treaty, but their principal objection concerned an interpretation of the agreement by certain countries that Latin American parties to the treaty were prohibited from developing and using peaceful nuclear explosives, devices that Argentine leaders reserved the right to utilize for excavation projects and oil and gas exploration.

The alleged prohibition arose from an interpretation rooted in a contradiction between Articles 1, 5, and 18 of the treaty. Article 1 obligated parties to the treaty to use nuclear programs under their jurisdiction exclusively for peaceful purposes and prohibited the parties from developing, acquiring, testing, or using nuclear weapons (U.S. Arms Control and Disarmament Agency 1990, 69). However, Article 18 permitted parties to the agreement to "carry out explosions of nuclear devices for peaceful purposes..." (U.S. Arms Control and Disarmament Agency 1990, 75). The apparent prohibition placed on Latin American treaty partners from developing peaceful nuclear explosives stemmed from the definition of nuclear weapons contained in Article 5. According to this provision nuclear weapons are "any device which is capable of releasing nuclear energy in an uncontrolled manner and which has a group of

characteristics that are appropriate for uses for warlike purposes" (U.S. Arms Control and Disarmament Agency 1990, 70).

Since peaceful nuclear explosives release energy in an uncontrolled manner and because they possess characteristics that render them useful for warlike purposes, they can be readily construed as nuclear weapons. The only difference between a peaceful nuclear explosive and a nuclear weapon is their employment, otherwise they are indistinguishable. Consequently, in the view of certain governments, such as the United States, Mexico, and others in Latin America, the Treaty of Tlatelolco prohibited the manufacture and use of peaceful nuclear explosives by Argentina (Aja Espil 1985, 76). Further, this prohibition would exist as long as such devices could not be distinguished from nuclear weapons, essentially an impossible differentiation given the characteristics of a nuclear explosion.

Argentine concerns about the NPT, which was opened for signature the year after the Treaty of Tlatelolco, were two-fold: the provision of security assurances by nuclear-weapons states to non-nuclear weapons states and a belief that the treaty was discriminatory. During UN deliberations on the NPT, the Argentine ambassador, among other representatives, stated that because the treaty froze the non-nuclear status of certain countries it was necessary that the nuclear-weapon states provide assurances to these countries that they would not be subject to intimidation because they renounced nuclear arms (Waisman 1975, 283-84). In order to mollify these countries and to encourage their adherence to the NPT the United States, Soviet Union, and Great Britain submitted to the Eighteen-Nation Disarmament Committee a tripartite proposal urging adoption of a UN resolution that would call for Security Council action if non-nuclear states party to the

treaty were subject to nuclear aggression (U.S. Arms Control and Disarmament Agency 1990, 93-94). Following submission of the NPT to the UN General Assembly, the tripartite resolution was submitted to the Security Council (U.S. Arms Control and Disarmament Agency 1990, 94). In 1968, in a formal declaration the United States stated its intention to pursue immediate Security Council assistance for any non-nuclear state party to the NPT that was subjected to nuclear threats or aggression (U.S. Arms Control and Disarmament Agency 1990, 94). The Soviet Union and Great Britain provided similar declarations.⁷

In addition to the issue of security assurances, the Argentine government opposed what it perceived as a discriminatory relationship established by the NPT between the nuclear- and non-nuclear weapons states. Specifically, objections were raised that the treaty preserved the international nuclear status quo by dividing the global system into nuclear "haves" and "have-nots," i.e., those who could legally possess nuclear weapons and those who could not (Aja Espil 1985, 74). Further, the Argentines opined that neither the United States nor Soviet Union was prepared to fulfill their obligations under treaty, namely an early cessation to the nuclear arms race (Aja Espil 1985, 74). The head of the Argentine delegation to the UN during the discussion on the NPT opined that:

the major nuclear Powers should understand that the sacrifice to be made by the non-nuclear weapon countries under the system of the treaty is extremely high.... Despite this advance in the field of horizontal nonproliferation, there is no indication at this time that would allow us to assume there will be a reduction in the arms race among those who possess the most weapons. Paradoxically, this treaty is for the disarmament of the disarmed. (Aja Espil 1985, 74)

Indeed, for more than the next two decades, the failure of the superpowers to achieve reductions in their nuclear arsenals through arms control measures remained a

contentious issue for many countries that felt compelled to accede to the NPT.

Throughout this period, Argentina continued to resist arguments and pressures intended to induce its adherence to the treaty.

Approaching the Brink: Brazil

Genesis and Motivations

The Brazilian nuclear program began in the 1950s during the administration of President Getúlio Vargas (Solingen 1994, 158). In 1953, Vargas sent Admiral Alvaro Alberto, director of the National Research Council, to West Germany to procure three gas centrifuges (Myers 1984, 883).⁸ During the visit arrangements were also made for Brazilian scientists to receive training in handling heavy gases, such as uranium hexafluoride used in the uranium enrichment process (Myers 1984, 883). As soon as this attempt to obtain nuclear technology was discovered by the American High Commissioner to Germany, the United States pressured German officials, who cancelled the agreement (Myers 1984, 883). The Eisenhower administration realized the incident demonstrated that the U.S.-Soviet-British monopoly on nuclear technology was over. Thus the United States inaugurated the Atoms for Peace program, which offered to share nuclear technology with states that pledged to use nuclear energy only for peaceful purposes and accepted inspections of the nuclear facilities (Myers 1984, 884).

Between the mid-1950s and early 1970s, the waxing and waning of U.S.-Brazilian relations, domestic political considerations in Brazil, and concerns about the Argentine nuclear program influenced Brazilian nuclear policy (Myers 1984, 884). From 1956 through 1961, President Juscelino Kubitschek pursued close ties with the United States and exhibited a preference for American-supplied reactors and enriched uranium fuel for

Brazil's planned nuclear-powered electric industry (Myers 1984, 884). However, Kubitschek's successors, Jânio da Silva Quadros and João Goulart, preferred a more independent path that utilized the natural uranium/heavy water cycle; hence, they opted to use France as an alternative supplier of technology (Myers 1984, 884). Following a coup in 1964, the regime of Humberto Castelo Branco suspended discussions with France and established a moratorium on all negotiations by Brazil to obtain nuclear technology (Courtney 1980, 252; Myers 1984, 884).

The Brazilian nuclear program was a modest effort until 1972, when the government contracted to purchase a power reactor from the U.S. firm Westinghouse (de Castro, Majlis, Rosa, and Barros 1989, 22). Soon thereafter, construction of an electric generating station commenced at Angra dos Reis to house the Angra I nuclear reactor (de Castro et al. 1989, 22). The deal was troubled from the outset. Brazil sought a complete fuel cycle that included not only nuclear reactors but also uranium enrichment and plutonium recovery technology (Myers 1984, 885). Since Brazil was not a signatory of the NPT, the U.S. government forbade American companies from selling such technology to Brazil. Then, in 1974, the United States returned a deposit that Brazil had made for enriched uranium reactor fuel, contending that an earlier contract was contingent on the availability of the service (Myers 1984, 885). Since the United States could not guarantee the service, it could not retain the deposit (Myers 1984, 885).

The problems associated with the Westinghouse deal and the de facto cancellation of American uranium enrichment services were apparently crucial decision points for the Brazilian government. Soon, the Brazilians engaged in negotiations with the West Germans for a complete fuel cycle (Barnaby 1993, 106). In 1975, the Brazilians and

West Germans consummated an arrangement for an unprecedented transfer of nuclear technology. The agreement enabled Brazil to purchase as many as eight nuclear power reactors, a reactor fuel fabrication plant, a reprocessing facility to extract plutonium from spent reactor fuel, and a uranium enrichment facility (Rosenbaum 1975, 255-56).

Four motivations compelled the Brazilians to pursue an independent nuclear path that led to the deal with West Germany. First, there was a belief in official circles that a nuclear program would boost Brazil's international status. After signing the agreement with West Germany, Brazil's foreign minister offered that his country had "gained new technological and political status on the world scene with the nuclear agreement" (Howe 1975, 2). Moreover, the Indian detonation of a nuclear device in 1974 also may have reinforced a long-standing Brazilian belief that nuclear programs and international prestige were linked (Rosenbaum 1975, 261).

Some Brazilian officials believed that their country had a special regional and international destiny (Myers 1984, 881).⁹ For them, Brazil's regional and international roles could be enhanced not only by a nuclear program but by possession of nuclear explosives. They believed that special recognition was accorded to states that demonstrated a nuclear explosive capability. They cited the regional and international status that accrued to Great Britain, which had lost much of its economic and industrial strength, because it possessed nuclear weapons (Rosenbaum 1975, 268). For proponents of this nationalistic theme, states that opposed the development of nuclear explosives by Brazil were attempting to establish an unalterable international status quo that Brazil should resist (Rosenbaum 1975, 269).

A second motivation for the Brazilians involved the progress of Argentina's nuclear program and fear of lagging behind that country's accomplishments (Rosenbaum 1975, 261). By the time that Brazil signed the agreement with West Germany, the Atucha I reactor had commenced operation and Argentina had contracted with Atomic Energy of Canada for the construction of the Embalse facility. In order to prevent falling further behind and to maintain itself as a viable continental competitor, Brazil needed a program as sophisticated as Argentina. Not only did the German deal represent such an achievement, but the reactors were more advanced than those being constructed in Argentina (Rosenbaum 1975, 261). Thus the agreement with West German was judged as a way to arrest and perhaps to surpass Argentina's lead in the nuclear field.

There was also a more ominous tone among Brazilians who followed the progress of the Argentine nuclear program. They believed that Brazil should develop nuclear weapons because Argentina intended to develop atomic weapons. These Brazilians feared that Argentina felt threatened by Brazil's size, wealth, and modernization and would use nuclear weapons to freeze the power relationship between the two countries (Rosenbaum 1975, 267). They also believed that the Argentines would use the threat of nuclear weapons to stifle Brazilian initiatives they opposed, such as construction of a hydroelectric station at Itaipu (Rosenbaum 1975, 267). For these Brazilians, the possibility of Argentine blackmail was an unacceptable choice when an alternative existed – the development of a nuclear deterrent.

Nuclear independence was also motivated by the Brazilian government's pursuit of a method to satisfy its growing electrical energy requirements. The oil crisis of 1973 followed by the dramatic rise in oil prices in 1974 convinced Brazil's policymakers that

the economic miracle of the Medici regime could not be sustained by relying on expensive foreign oil, which constituted 80 percent of Brazilian consumption in 1974 (Redick 1975, 423). Brazil relied heavily on hydroelectric power, but studies indicated that by 1985 the potential to expand hydroelectric capacity in the center-south area of the country, where nearly half the population lived and almost all of Brazil's industry was located, would be exhausted (Rosenbaum 1975, 262; Schneider 1976, 93). Nuclear energy appeared as a relatively inexpensive and bountiful source of electrical energy to sustain economic growth.

Finally, nuclear independence enabled the Brazilian government to demonstrate that it no longer deserved to be perceived as "America's 'Junior Partner' in South America" (Rosenbaum 1975, 262). Moreover, the Brazilians sought to preserve their latitude to use nuclear technology in ways they deemed necessary to meet the country's economic, political, and social needs (Kapur 1979, 344). Few Brazilians believed the United States would levy sanctions on most peaceful applications of American-supplied technology, but Brazilian decision makers were not content to have any limitations placed on their use of atomic energy (Rosenbaum 1975, 263). Specifically, Brazilian officials feared cessation of American assistance if they developed nuclear explosives for excavation projects or natural resource exploitation. The German deal provided an avenue to sidestep all of these concerns.

Technical Infrastructure

From the mid-1970s until its curtailment under President Fernando Collor de Mello, Brazil's nuclear program was pursued along two paths: one civilian and the other military. The first path was, until 1988, the responsibility of the state-owned Brazilian

Nuclear Corporation (Nuclebras), while the second path was controlled by the military and the National Atomic Energy Commission (CNEN) (Spector 1990, 243-44).

Nuclebras and Kraftwerk Union, the nuclear branch of Siemens, jointly managed the 1975 agreement between Brazil and West Germany (de Castro et al. 1989, 22). In addition to nuclear reactors, West German industry was expected to provide a reactor fuel fabrication plant, a pilot-scale plutonium extraction facility, and a commercial-scale uranium enrichment plant that used Becker nozzle technology – all (except the reactors) to be located at the Resende complex (Spector 1990, 261).¹⁰

From the outset, the agreement with West Germany heightened fears in the nonproliferation community. In particular, the uranium enrichment and plutonium recovery plants evoked special concern because of their potential use in a nuclear weapons program (Rosenbaum 1975, 257). Overall, the uranium enrichment facility seemed to arouse slightly less apprehension than the Resende plutonium facility. Perhaps this was because the Becker nozzle technology was unproven on a commercial scale and known to be uneconomical because of the enormous amount of electricity it required to operate (de Castro et al. 1989, 23). Much of the nonproliferation focus was on the reprocessing facility, which was expected to extract at full operation 25 kilograms (55 pounds) of plutonium annually – about enough for two simple nuclear explosive devices (Albright 1989, 20; Gardner 1994, 7).

In order to assuage international concerns about the uranium enrichment and plutonium recovery plants the West German government stated that the nonproliferation obligations it incurred as a signatory of the NPT would be applied to the agreement with Brazil, in addition to supplementary safeguards levied by Bonn as a condition for the

transaction (Rosenbaum 1975, 257). The Germans also argued that the Brazilians could eventually develop nuclear facilities without external assistance, then there would be no international control (Rosenbaum 1975, 258). Nonetheless, critics of the Brazilian-German deal pointed out that the small staff of the IAEA would be unable to monitor nuclear activities in a country as large as Brazil (Rosenbaum 1975, 258). Moreover, they were dubious about future Brazilian governments complying with the agreement's safeguards, especially after Brazilian scientists had ample opportunity to master and to duplicate German technology for application in unsafeguarded activities (Rosenbaum 1975, 258).

Most knowledgeable Brazilians supported the agreement with West Germany; however, opposition was raised by the scientific community. This group asserted that turnkey stations such as Angra I and the planned Angra II and III facilities favored foreign commercial interests, but did not promote the development of indigenous technology (de Castro et al. 1989, 22-23). Further, they argued, the Becker nozzle was an uncertain approach to uranium enrichment on an industrial scale; hence, Brazil placed its hopes on a technology that not even the Germans had perfected (Reiss 1995a, 56). Finally, Brazilian scientists expressed concerns about the adequacy of safety measures and environmental protection, as well as the health of Brazilians living near the nuclear facilities (de Castro et al. 1989, 22-23).

The Brazilian military also opposed the agreement with West Germany, albeit not entirely for the same reasons as the scientific community. In addition to harboring doubts about the Becker technology, many senior officers believed that safeguards associated with the transfer of German technology were too intrusive (Reiss 1995a, 50).

Consequently, suggestions were made for a nuclear program to be developed parallel to the civilian effort, but one that relied on indigenous technology not subject to international safeguards (Spector 1990, 243). Toward that end, a small group was formed at the Research Institute in Nuclear Engineering (IPEN) in São Paulo to perfect uranium enrichment using centrifuge technology, and without foreign assistance or international scrutiny (Reiss 1995a, 50). The Brazilian Navy, which led the IPEN effort, had expressed interest in low-enriched uranium for application in submarine nuclear propulsion reactors, but mastery of the technology could also be used to develop a larger program for nuclear weapons.¹¹ This program, undertaken covertly to preclude domestic opposition and the termination of West German assistance, became known as the "parallel program" (Reiss 1995a, 50).

Although the government was reticent about activities associated with the "parallel program," periodic statements by senior officials aroused doubts about whether Brazil's nuclear effort was dedicated exclusively to peaceful purposes. In 1985, Admiral José Maria do Amaral Oliveira, Chief of the Armed Forces General Staff, publicly opposed a proposed amendment to the Brazilian constitution that would have prohibited the development of nuclear weapons (Spector 1990, 244). Other senior military officials expressed similar sentiments. Army Minister Leonidas Pires Gonçalves urged members of the Brazilian Congress to support development of nuclear weapons (Spector 1990, 244). General Haroldo Erichsen Fonseca, Army Secretary for Science and Technology, asserted that Brazil could possibly construct nuclear weapons within two years, although the country had no current plans to do so (Spector 1990, 244).

Late in the summer of 1986, a Brazilian newspaper alleged the existence of a nuclear weapons test site at the Cachimbo Air Base in the Amazon forest (Reiss 1995a, 51). This site consisted of a shaft three feet in diameter and about 1,000 feet deep (Spector 1990, 245). It was the dimensions of the hole that elicited attention. The width and depth of the shaft corresponded closely to holes prepared for low-yield nuclear detonations in the U.S.'s Project Plowshares program at the Nevada Test Site during the 1950s and 1960s (de Castro et al. 1989, 2). The Brazilian government denied the newspaper allegation. Various explanations for the site have been offered, including that the shaft was part of a mineral exploration project, that it was connected to air force aerospace testing, and that it was a nuclear waste dump (Redick, Carasales, and Wrobel 1995, 113; Reiss 1995a, 51).¹²

The purpose of the Cachimbo site was never explained satisfactorily, but it is interesting that soon after the revelation the military acted to gain complete control of the "parallel program." CNEN, previously under the Ministry of Mines and Energy, was subordinated to the National Security Council, composed of the president and military service chiefs (Spector 1990, 246). About two months after this reorganization, the director of CNEN, Rex Nazareth Alves, disclosed that a small quantity of plutonium was recovered by his group from spent reactor fuel (Do-it-yourself-reprocessing 1987, 80). Alves did not specify where the reprocessing occurred, but it may have taken place at IPEN, although some sources indicate that it is unclear whether this laboratory ever operated (Spector 1990, 252).

About nine months after Alves's disclosure, President José Sarney announced that Brazil had produced a small quantity of low-enriched uranium at the IPEN facility

(Spector 1990, 247). The announcement also stated that construction would commence at the Aramar Experimental Center at Iperó on a pilot-scale uranium enrichment plant using centrifuge technology (Spector 1990, 247-48). The implications of Alves's disclosure and Sarney's announcement were two-fold. First, the IPEN achievement and the eventual operation of the Aramar facility could bring Brazil a step closer to producing fissile material for possible weapons application. Second, since the Aramar facility would use technology developed in Brazil it was entirely unsafeguarded.

From a nonproliferation perspective, two key issues surrounded the Aramar facility: whether the plant could produce highly-enriched uranium for nuclear weapons and, if so, in what quantities. The principal purpose of the facility was to produce fuel for the country's nuclear power stations and for possible use in the future in submarine nuclear reactors (Milhollin and Weeks 1991, 27). International concern was expressed when it was suggested that submarine propulsion reactors required uranium enriched to 70 percent U-235, not far below the level necessary for nuclear weapons (Spector 1990, 248).¹³ Calculations showed the Aramar facility could normally produce enough weapons-grade uranium for one explosive device every three years (Albright 1990, 14). However, at full stretch, a process that involves drastically reducing the amount of enriched uranium extracted from centrifuge cascades causing the final product to be enriched at a much higher level, i.e., weapons-grade, the Aramar plant could produce enough fissile material for two or three explosives annually (Albright 1990, 16; Clegg 1993, 62).

Despite its ambitious character the Brazilian nuclear program encountered problems. The Angra I reactor was so prone to failure that it proved to be an unreliable

source of electricity (Goldemberg and Feiveson 1994, 13). The Angra II and III facilities were over budget and behind schedule (Reiss 1995a, 56). Moreover, because of economic distress in Brazil, President Sarney cancelled the purchase of the remaining six reactors from West Germany (Spector 1990, 243). The Resende reprocessing plant was postponed indefinitely, and only the first stage of the Resende uranium enrichment facility was scheduled for completion (Spector 1990, 243). Even the "parallel program" was troubled. Together the Aramar and IPEN facilities had produced only miniscule quantities of low-enriched uranium (Reiss 1995a, 56).

Position on the Nonproliferation Regime

Brazilian views on the international nuclear nonproliferation regime were, like Argentina, focused on the Treaty of Tlatelolco and the NPT. In the early 1960s, Brazil was among the countries that promoted a nuclear weapons free zone in Latin America (Courtney 1980, 255). Indeed, the Brazilian government signed and ratified the Treaty of Tlatelolco in 1967 and 1968, respectively. However, Brazil did not bring the treaty into force. The primary objection to the agreement raised by successive governments concerned the interpretation of the accord that prohibited the development of peaceful nuclear explosives (Courtney 1980, 257).

In spite of IAEA studies that stated that peaceful nuclear explosives could be "significant in exploiting natural resources," the United States, Mexico, and other countries in Latin America adopted an interpretation of the Treaty of Tlatelolco that foreclosed Brazilian development of these devices (Kapur 1979, 346). Nevertheless, Brazilian officials insisted on the right to create and to use nuclear explosives for development projects. The Brazilian government had a penchant for grand projects to

demonstrate its prowess, such as the Trans-Amazon Highway and the Rio-Niteroi Bridge, which linked the city of Rio de Janeiro to the cross-bay suburb of Niteroi (Rosenbaum 1975, 269). An ambitious nuclear program that included explosives would enhance the government's and the country's images. Projects to excavate canals and seaports, to extract oil from shale in the states of Paraná and São Paulo, or to connect regions of South America by linking the Plata, Amazon, and Orinoco Rivers were identified as possible uses for nuclear explosives (Rosenbaum 1975, 263).

Of course, the possible military uses of nuclear explosives were recognized by the regimes that held power between 1964 and 1985. Because of these reasons, any genuine support for the international nonproliferation effort essentially vanished (Serrano 1994, 234). During this period Brazilian nuclear policy was heavily influenced by the military, which included nuclear energy as one dimension of the national security agenda (Serrano 1994, 234). If Brazil entered-into-force the Treaty of Tlatelolco its option to develop nuclear explosives would be foreclosed. Clearly, in the context of the period, maintaining a more ambiguous policy that incorporated official statements recognizing the dangers of nuclear weapons proliferation and the assertion of the right to develop peaceful nuclear explosives was the preferred position of the government.

The issue surrounding peaceful nuclear explosives also affected the Brazilian view of the NPT, which the government of President Artur da Costa e Silva described as "discriminatory, restricting the right to full development by non-nuclear states of independent peaceful nuclear technology (including 'peaceful explosions')" (Selcher 1978, 77). Since all non-nuclear weapons states party to the NPT were obligated not to develop or to receive nuclear explosives, the use of such devices in development projects

could occur only if the explosions were conducted subject to international procedures and observation. Brazilians objected to this arrangement because it perpetuated a monopoly by the nuclear-weapon states as sole suppliers of peaceful nuclear explosives (Kapur 1979, 346; Selcher 1978, 77). The attitude of many Brazilians about the NPT was summarized by J.A. de Araujo Castro, a prominent diplomat, in a speech at the Brazilian National War College.

Brazil has sought to characterize what is now clearly looming as a firm and undisguised trend toward the *freezing of world power*.... The Non-Proliferation Treaty...is the main instrument of this policy of freezing of World Power.... The Treaty...established distinctive categories of nations: one comprising weak and therefore non-adult and non-responsible countries. Contrary to all historical evidence, the Treaty starts from the premise that prudence and moderation are built-in features of Power. It institutionalizes inequality between nations and apparently accepts the premises that the strong countries will become ever stronger and the weak will grow ever weaker. (Rosenbaum 1975, 268)

Many Brazilians also faulted the superpowers for their failure to comply fully with an obligation they assumed under the NPT to halt the nuclear arms race "at an early date" (U.S. Arms Control and Disarmament Agency 1990, 100). Further, they criticized the absence of any mechanism in the NPT that bound the superpowers to achieve reductions in their large stocks of nuclear weapons (Selcher 1978, 77). Brazil had long-favored a binding commitment by the superpowers not only to reduce their nuclear arsenals, but to use a portion of the savings attained through disarmament for modernization in developing countries (Courtney 1980, 254-55).

One of the most comprehensive Brazilian statements on the NPT was issued in a White Paper in 1977. The document explained the Brazilian government's position on the treaty and suggested reasons for its refusal to sign the accord. The fact that the

introduction to the paper was written by Brazilian President Ernesto Geisel indicated that it was considerably more important as an authoritative view than the standard refrains usually issued by governments opposed to the NPT (Goldemberg 1985, 81). The text of the White Paper noted that:

the NPT seeks to legitimize a distribution of power which is unacceptable, because it results from the stage at which States found themselves at the date of its signature, as regards the application of nuclear weapons technology. As a result of this stratification, the Treaty requires strict control by the IAEA over the dissemination of the peaceful uses of the atom, while in relation to the nuclear weapon countries, no barrier is erected to the vertical proliferation of nuclear armaments, as evidenced by the continuing growth and sophistication of their nuclear weaponry.... The true sense of non-proliferation is to ban the diffusion of nuclear weapons, not the dissemination of nuclear technology for the benefit of Man. Given adequate controls, the access to the technology for peaceful uses of nuclear energy should not be subjected to discriminatory restrictions, whether between nuclear weapon and non-nuclear weapon countries or among non-nuclear countries themselves. (Goldemberg 1985, 81-82)

Although the White Paper united members of the Brazilian government against the NPT, specific positions on the treaty differed. Civilian officials perceived nuclear energy as a crucial component for further modernization, especially as a source of electricity.¹⁴ A burgeoning need for energy concomitant with a search for an alternative to uncertain supplies of expensive foreign oil sustained support for an independent nuclear program. Indeed, a passage in the White Paper noted that “the economic growth of the country...cannot be dependent upon third countries’ decisions as to prices and supplies of essential fuels” (Goldemberg 1985, 83).

Opposition to the NPT by Brazil’s military establishment reflected a desire to retain a nuclear weapons option, which was confirmed by subsequent revelations about

the "parallel program."¹⁵ Throughout the period of rule by Brazil's juntas, the military exercised considerable influence on the country's nuclear policy. This influence began to wane with the advent of democratic government. Nevertheless, José Sarney, Brazil's first civilian president in two decades, moved slowly and cautiously to restrict the nuclear activities of Brazil's military, primarily because he required their support amid declining popularity and an increasingly assertive national legislature (Goldemberg 1985, 84; Spector 1990, 248). Ultimately, it was the combination of Brazil's nuclear infrastructure, statements by prominent officials regarding nuclear weapons, insistence on retaining the right to develop nuclear explosives, failure to enter-into-force the Treaty of Tlatelolco, and refusal to sign the NPT that led some observers to conclude in the mid-1980s that "Brazil was committed to developing nuclear weapons by the early 1990s" (Reiss 1995a, 52).

Reversing Course: Argentina and Brazil

Antagonisms between Argentina and Brazil were an outgrowth of political and economic rivalry. As a consequence, both countries developed a "culture of competition" (Reiss 1995a, 52). Due to an undercurrent of mistrust resulting from this competition, the potential for armed violence "remained a very real element in the military planning of the two nations" (Redick et al. 1995, 110). Mutual suspicions impeded substantive interstate cooperation in many areas, especially in the nuclear field where "improvizations or decisions taken too late can be fatal" (Guglielmelli 1976, 165).

Nevertheless, a degree of non-institutionalized nuclear cooperation between Argentina and Brazil emerged prior to 1980. This interaction occurred principally between Argentina's CNEA and Brazilian research organizations, primarily academic

institutions (Carasales 1992, 51). Beyond this limited cooperation officials in both countries exhibited scant interest in formalizing collaborative arrangements (Carasales 1992, 51). Cooperative efforts often stalled over the long-standing conflict involving the exploitation of the Río de la Plata basin, which was exacerbated by Brazil's plan to construct a hydroelectric facility at Itaipu (Reiss 1995a, 53). Once this dispute was resolved by the Río de la Plata agreement in 1979 the stage was set for cooperation in other areas.

In May 1980, Brazilian President João Figueiredo visited Argentina, the first face-to-face meeting between the two countries' heads of state in forty-five years (Schmitter 1991, 109). During the meeting Figueiredo and Argentine President Jorge Videla signed an agreement that committed both countries to use their nuclear programs to "pursue peaceful purposes exclusively" (Carasales 1992, 52). The agreement also stated that Argentina and Brazil would "oppose the development of atomic weapons" (Carasales 1992, 52). During the same summit, arrangements were made between CNEA and CNEN for cooperation in basic nuclear research, radioisotopes, and radiological safety (Carasales 1992, 52). Pursuant to a framework agreement Argentina and Brazil signed two additional documents: the Protocol of Execution No. 1 and the Protocol of Execution No.2, which dealt with cooperation in training nuclear sector personnel and technical information, respectively (Carasales 1992, 52). The first protocol proved unsatisfactory, while the second functioned reasonably well (Carasales 1992, 52).

The 1980 agreement, while a small step towards cooperation, began a process aimed at reducing distrust and suspicion between the two countries. During the early 1980s, events conspired to slow the pace of cooperation. Perhaps most notably, the

Argentine decision to wrest the Islas Malvinas (Falkland Islands) from British control sensitized the Brazilian government to the possibility of further regional military adventurism by the Galtieri regime. Further, a subsequent announcement regarding the enrichment of uranium at the previously secret Pilcaniyeu facility heightened Brazilian concern about Argentine nuclear activities (Reiss 1995, 54). Although the Argentines informed Brasilia several days prior to the public announcement, the Brazilians harbored doubts about Argentine intentions.

In early 1985, Argentine President Raúl Alfonsín met Brazil's President-elect Tancredo Neves. At the meeting it was agreed that each country would permit the inspection of its nuclear facilities by officials from the other country (Spector 1990, 225). Not only did this agreement represent a further step towards cooperation, it provided each president with the ability to deflect criticism from opponents of greater nuclear transparency. The agreement was palatable because both presidents could assert to critics that neither had succumbed to external pressures for inspections of their nuclear facilities. Since the inspections would be conducted bilaterally, no international body would scrutinize Argentina's or Brazil's nuclear activities.

Following Neves's untimely death, Alfonsín met with his successor, President José Sarney, in late 1985 at the Argentine-Brazilian border town of Foz de Iguazú where they signed several agreements, including the Joint Declaration on Nuclear Policy (Carasales 1992, 53).¹⁶ The principal provisions of the declaration included a reiteration by both presidents to use nuclear energy only for peaceful purposes, a commitment to cooperate in the field of nuclear energy, and to extend cooperation to other Latin American countries that shared these goals (Carasales 1992, 53). Alfonsín and Sarney

also agreed to create a joint working group composed of members from both countries' government and industrial organizations (Reiss 1995a, 55). Importantly, the working group was the responsibility of the Argentine and Brazilian foreign ministries (Reiss 1995a, 55). This arrangement ensured that the group would be subject to bureaus that were sensitive to the nonproliferation regime and committed to bilateral cooperation.

The working group's goals included the creation of mechanisms to facilitate peace, security, and development in the region (Carasales 1992, 53). As one way to attain these goals, the group decided to move forward with mutual inspections of both countries' nuclear facilities (Reiss 1995a, 55). Inspections would deflate to some extent international criticism of Argentine and Brazilian nuclear activities and, importantly for Alfonsín, inspections would enable him to diminish the military's role in the country's nuclear program (Reiss 1995a, 57). The Sarney administration, not yet firmly established, demurred politely, fearing a backlash from Brazil's military departments that still aimed to develop nuclear weapons (Reiss 1995a, 57).

At a summit between Alfonsín and Sarney in late 1986, both presidents pledged in the Declaration of Brasilia that their countries would strengthen mutual confidence in the area of civilian nuclear energy (Carasales 1992, 56). During the visit, Argentine officials were granted access to IPEN, where the Brazilian Navy had conducted secret research on plutonium reprocessing and uranium enrichment outside international safeguards (Reiss 1995a, 55). Granting access to the Argentines not only revealed the existence of the facility and its activities, but also that they were not being used to develop nuclear weapons (Spector 1990, 226). Given the experimental nature and small-scale of the

IPEN operation disclosure of its existence was less important than the mutual confidence created by opening the facility to a regional rival.

In early July of 1987, Alfonsín and Sarney signed the Declaration of Viedma, which reiterated emphatically that both countries sought only the peaceful uses of nuclear energy (Carasales 1992, 55-56). During the meeting Sarney was given access to the previously secret Pilcaniyeu uranium enrichment plant (Spector 1990, 226). Although no technical details about the facility were disclosed, the tour was important for two reasons. First, it was a reciprocal gesture for the visit by Argentine officials to nuclear installations in Brazil. Second, it represented another step towards reducing mutual suspicion and bolstering mutual confidence. Clearly both presidents were making progress in surmounting the resistance of those opposed to greater bilateral nuclear transparency, and they were overcoming the nationalism that had inspired and sustained both countries' nuclear programs, specifically the weapons aspect (Spector 1990, 226).

By March of 1988, Argentine experts had toured all Brazilian nuclear facilities not subject to IAEA safeguards, with the exception of a facility near Rio de Janeiro that contained a sub-critical nuclear assembly (Reiss 1995a, 57).¹⁷ A further manifestation of flourishing cooperation was Alfonsín's participation at the dedication of Brazil's Aramar Research Center, whose centrifuge for uranium enrichment could have brought Brazil closer to producing fissile material for possible weapons application. Alfonsín's presence at the dedication highlighted the growing trust between Argentina and Brazil to demonstrate that facilities operated outside international safeguards were not being used to develop nuclear weapons (Spector 1990, 226).

The following month Alfonsín and Sarney signed the Declaration of Iperó (Carasales 1992, 54). This agreement transformed the joint working group into the Argentine-Brazilian Permanent Committee on Nuclear Affairs (Reiss 1995a, 57). In part, the declaration also noted that:

bilateral cooperation in the nuclear field introduces unprecedented forms of cooperation promoting an increasing number of visits, political and technical contacts, and significant exchange of information, [contributing]...to the consolidation of...mutual confidence. (Carasales 1992, 56)

By creating a permanent committee to replace the joint working group the governments of Argentina and Brazil institutionalized a path for bilateral cooperation and nuclear restraint. The declaration also signaled the desire of both countries' governments to strengthen mutual trust in the nuclear field.

Several months after the Iperó Declaration, the Brazilian Congress acted to restrict the use of the country's nuclear program only for peaceful purposes (Spector 1990, 249). The Congress adopted a constitutional amendment that "all nuclear activity in the national territory will only be admitted for peaceful purposes" (Goldemberg and Feiveson 1994, 13). Moreover, the amendment provided for congressional approval of nuclear activities (Redick et al. 1995, 113). The support of the Brazilian military for this amendment over a version that would have forbidden the development of nuclear weapons revealed the limits of congressional action (Goldemberg and Feiveson 1994, 13).

The amendment adopted by the Brazilian Congress appeared to establish tight civilian control over nuclear activities, but in reality the restraints on the program were much less restrictive. First, the amendment did not prohibit the accumulation of

weapons-grade uranium or plutonium, the existence of which could enable the military to exercise a nuclear weapons option at a later date (Spector 1990, 250). Second, the amendment did not proscribe the operations conducted by the military at research centers, which excluded certain activities from civilian oversight (Spector 1990, 250). Third, the amended constitution did not prohibit the development of peaceful nuclear explosives, which, as noted above, could be diverted to military purposes (Spector 1990, 250). Nevertheless, the fact that a constitutional amendment was passed prohibiting non-peaceful activities was extraordinary given the influence that the military exerted on the Brazilian nuclear program (Goldemberg and Feiveson 1994, 13).

In November 1988, Sarney traveled to Argentina for a fifth summit with Alfonsín (Spector 1990, 229). During the visit, Sarney toured the Ezeiza plutonium extraction facility. As a result of the growing confidence and trust between their countries, Brazilian officials expressed no concern about the facility (Spector 1990, 229). Additionally, Argentina and Brazil issued the Declaration of Ezeiza. In this accord on nuclear cooperation both countries reaffirmed their commitment to reciprocal exchanges of knowledge and joint efforts on projects of mutual importance (Carasales 1992, 56).

In early May of 1989, Carlos Saúl Meném was elected president after a severe economic crisis prompted Alfonsín's resignation (Spector 1990, 228). Given his Perónist political credentials, many Argentines, as well as some outside observers, expected Meném to slow the nuclear rapprochement with Brazil (Albright 1989, 16; Goldman 1991, 10). Throughout the presidential campaign Meném seemed to embrace the reservations expressed by Perónists in the national legislature who opposed cooperative nuclear restraint with Brazil (Spector 1990, 231). Although Meném made statements to

indicate that he perceived no reason to acquire nuclear weapons, he did not suggest the option should be foreclosed (Spector 1990, 231). However, to the surprise of many and the chagrin of some, Meném persisted on the course set by his predecessor.

In November 1990, Meném and President Fernando Collor de Mello, also a staunch nationalist who many expected to slow the pace of nuclear rapprochement, signed the Joint Declaration of Common Nuclear Policy at Foz de Iguazú (Goldman 1991, 10). The new heads of state reiterated their pledges to use nuclear energy for peaceful purposes (Reiss 1995a, 59). The declaration also included provisions for the mutual inspection of each country's nuclear installations and arrangements to establish the quantities of enriched uranium and plutonium possessed by both countries (Homewood 1990, 14). The latter subject had been the source of some controversy, particularly the disposition of over 200 kilograms (440 pounds) of low-enriched uranium supplied by the PRC to Brazil in the 1980s (Milhollin and Weeks 1991, 30). Perhaps most surprisingly, both countries renounced their long-standing insistence on the right to develop peaceful nuclear explosives, and they agreed to adopt a modified version of the Treaty of Tlatelolco (Redick et al. 1995, 113; Solingen 1994, 161).

As a follow-on to the agreements reached at Foz de Iguazú, Argentina and Brazil signed the Guadalajara Accord in July of 1991 whereby each country pledged to abjure the production, acquisition, testing, or use of any nuclear explosive device (Reiss 1995a, 60). Additionally, the accord included provisions to establish the Common System of Accounting and Control of Nuclear Materials (SCCC), which is intended to verify that all nuclear materials in all nuclear activities in both countries are used only for peaceful purposes (Goldemberg and Feiveson 1994, 10). The accord also created the Brazilian-

Argentine Agency for Accounting and Control of Nuclear Materials (ABACC), designed to administer and to implement the SCCC by monitoring nuclear installations (Goldemberg and Feiveson 1994, 10). In accordance with the SCCC framework, Argentina and Brazil provided ABACC with an initial inventory of all nuclear material and design and technical information about all nuclear facilities in both countries (Redick et al. 1995, 114). Periodic inspections are conducted for data verification, and any abnormalities are reported by the ABACC Secretariat to the four-member Argentine-Brazilian Commission (Redick et al. 1995, 114). In the event of a serious case of noncompliance, either state may abrogate the agreement and notify the UN Secretary General and the Organization of American States (Redick et al. 1995, 114).

In December 1991, Argentina, Brazil, ABACC, and the IAEA signed the Quadripartite Safeguards Agreement (QSA), which placed all Argentine and Brazilian nuclear activities under international safeguards, and the Bilateral Agreement for the Exclusively Peaceful Uses of Nuclear Energy (Redick et al. 1995, 114; Reiss 1995b, 11). The QSA and its protocol established a comprehensive safeguards system regarding exports and imports of nuclear material and it specified arrangements for cooperation to apply safeguards (Goldemberg and Feiveson 1994, 11). The protocol to the QSA is similar to the safeguards agreements that exist between the member states of the European Union, the European Atomic Energy Agency (EURATOM), and the IAEA. EURATOM, which has been delegated safeguard responsibilities, conducts most inspections of nuclear facilities in member states with IAEA oversight (Goldemberg and Feiveson 1994, 11). A similar relationship was intended to exist between ABACC and the IAEA in Latin America. This arrangement eliminates the need for individual

member-state systems that rely exclusively on self-verification and are subject to the authority of each country (Goldemberg and Feiveson 1994, 11).

The Meném administration submitted the QSA and the Bilateral Agreement to the Argentine Congress in early 1992; both were ratified within six months (Reiss 1995a, 61). The Brazilian Congress ratified the Bilateral Agreement, but hesitated on the QSA. Ratification was hampered by friction between Collor de Mello and the military over the QSA and later by a bribery scandal that precipitated the president's resignation (Krasno 1992, 11; Reiss 1995a, 61). Collor de Mello's successor, Itamar Franco, in an effort to gain the support of the military and nationalists in the legislature, made statements implying that Brazil would not adopt the QSA (Solingen 1994, 161). However, this effort failed to dissuade the House of Deputies (the lower house), which, under substantial pressure from the economic and foreign ministries, approved the QSA (Solingen 1994, 161-62).

Despite the House of Deputies vote to ratify the QSA, the Brazilian Senate deferred action on the agreement for two reasons. First, some CNEN officials, scientists, and nationalist politicians resisted the accord (Reiss 1995a, 61). Opposition among this group seemed to range from concerns about protecting proprietary information from industrial espionage during inspections to fears surrounding disclosures that could be made about activities in the "parallel program" (Reiss 1995a, 61). Second, concern was voiced over the IAEA's prerogative to conduct "special" inspections. In the aftermath of the Persian Gulf war, when Iraq was subjected to particularly intrusive inspections, some Brazilian officials opposed such scrutiny by the IAEA (Reiss 1995a, 61).

In order to persuade the Brazilian Senate to ratify the QSA, Hans Blix, Director-General of the IAEA, visited Brasilia. He assuaged concerns about protecting proprietary information at nuclear facilities by assuring Brazilian officials that similar issues were addressed and resolved successfully for inspections in Germany and Japan (Redick et al. 1995, 115). He pointed out that making design and technical information available to the IAEA would reduce both the time and intrusiveness of inspections (Redick et al. 1995, 115). Also, Klaus Kinkel, the German foreign minister, reminded Brazilian officials that German law would require the cessation of all cooperative programs by 1995 if Brazil did not adopt full-scope safeguards (Redick et al. 1995, 115).

Some observers believed that external influences compelled the Brazilian Senate to ratify the QSA, but others were less certain. They argued that "it was the combined effort of key Brazilian government officials and the scientific establishment that helped encourage favorable action by the Brazilian Congress" (Redick et al. 1995, 115). In their judgment the sustained involvement of the foreign and finance ministries and the support garnered from key bureaucratic players and leading Brazilian scientists were crucial elements in the Senate's decision to ratify the QSA in early 1994 (McCurry March 21, 1994, 166).

During the 1990 meeting at Foz de Iguazú, Meném and Collor de Mello agreed "to adopt...after the safeguards agreement with the IAEA is concluded...pertinent measures leading to the full entry into force for both countries of the Treaty for the Prohibition of Nuclear Weapons in Latin America (Treaty of Tlatelolco)..." (Goldemberg and Feiveson 1994, 10). In February 1992, Argentina, Brazil, and Chile proposed amendments to the treaty (Reiss 1995a, 65). The amendments did not alter the

fundamental goals of the treaty, but were intended to achieve greater confidentiality for the Argentine and Brazilian nuclear programs (Serrano 1994, 252ⁿ³³). The modifications to the accord limited the investigative authority of the treaty's organizational body, the Agency for the Prohibition of Nuclear Weapons in Latin America (OPANAL), eliminated "special" inspections of activities suspected to be in violation of the treaty, and elevated the role of the IAEA (Reiss 1995a, 65). OPANAL approved the amendments the following August. Argentina and Chile ratified the Treaty of Tlatelolco in January 1994; Brazil ratified the accord in May 1994 (Goldemberg and Feiveson 1994, 10; Reiss 1995a, 65).

Although ratification of the modified Treaty of Tlatelolco by Argentina and Brazil reduced suspicions about their nuclear activities and intentions, neither country had as yet adhered to the NPT. As the centerpiece of the international nonproliferation regime, accession to the NPT by suspected proliferators is generally seen as the *sine qua non* to earn the full confidence of states committed to nuclear nonproliferation. In early February 1995, Argentina set aside its objections to the agreement and formally acceded to the NPT (Reiss 1995a, 73). Brazil remained outside the treaty; however, by ratifying the QSA it accepted essentially the same obligations. On June 20, 1997, President Fernando Cardoso announced Brazil's intention to accede to the NPT (Arms Control Association 1997, 27).

Many Argentines and Brazilians who supported nuclear rapprochement hoped that by demonstrating cooperative restraint their countries could garner assistance in the nuclear field from the advanced industrial states. Toward that end, Argentina was compensated for its efforts to comply with the nonproliferation regime, as well as its

termination of the Condor 2 missile program, by several agreements that it negotiated for nuclear cooperation, including one with the United States for the transfer and protection of sensitive technology (Serrano 1994, 254n50).¹⁸ Further, because of its ratification of the QSA and the modified Treaty of Tlatelolco and accession to the NPT, Argentina signed an agreement with the United States on the peaceful uses of nuclear energy that paved the way for CNEA and Department of Energy cooperation (Christopher March 4, 1996, 90). Similarly, Brazil, because of its adoption of the QSA and the amended Treaty of Tlatelolco, signed an agreement with the United States to purchase nuclear materials and reactor components (Christopher March 4, 1996, 91).

Returning from the Brink: Argentina

A. Security Environment

1. Did the security environment change so that national leaders perceived less threat?

The Argentine-Brazilian rivalry exhibited few features to suggest the likelihood of interstate violence. However, several factors raised tensions between the two countries: the dispute over the Río de la Plata basin, the ties between the United States and Brazil, and the Brazilian nuclear program, particularly the 1975 deal with West Germany. U.S.-Brazilian ties began to loosen in the 1970s and the Río de la Plata dispute was resolved in 1979, so neither issue should have retained salience for the Argentines. Thus the status of Brazil's nuclear program should have remained as the only prominent issue on the Argentine national security agenda.

However, Argentina did not pursue a nuclear program only or even primarily to develop weapons. Equally important, some scholars noted as early as the mid-1970s that

a nuclear arms race would consume progressively larger amounts of economic resources and would not be in Argentine interests (Waisman 1975, 289). An influential Argentine scholar observed after Brazil's 1975 deal with West Germany that a nuclear competition with Brazil would be of "enormous cost at a time when both peoples need[ed] to apply all their resources to projects that will assure their socioeconomic...progress" (Guglielmelli 1976, 165). The absence of a direct Brazilian threat and the economic burden that a purposeful nuclear weapons program would have imposed on the Argentine economy suggest that concern about the national security environment was not a key element in Argentine calculations. Nevertheless, the nuclear rapprochement that emerged beginning in the mid-1980s no doubt contributed to an improvement in the regional security setting that provided even less basis for the possession of nuclear weapons (Molander and Wilson 1994, 30).

2. Did additional factors associated with the security environment influence national leaders that their country should remain non-nuclear?

Since the late 1960s, various security assurances have been offered by the United States and other nuclear powers to countries like Argentina. These guarantees are intended to assure states that abjure nuclear weapons that they will not be subjected to nuclear coercion by a nuclear power, and that they will be assisted if attacked by a nuclear-armed state. In the case of security guarantees offered to persuade states such as Argentina to abstain from developing nuclear weapons the assurances were oriented less towards an existing threat than the possibility that one might emerge in the future. As such, the assurances were primarily "sweeteners" to persuade a potential nuclear proliferator to adhere to the nonproliferation regime. Therefore, given the absence of

direct threats, it seems unlikely that security assurances per se had much affect on Argentine policymakers.

B. Domestic Environment

1. Did a change in the attitude among national decision makers regarding military competition with potential adversaries influence a decision to be non-nuclear?

Although nuclear cooperation between Argentina and Brazil began when both countries were governed by military regimes, progress was discontinuous. President Alfonsín used his first presidential news conference to establish that under his administration Argentina's nuclear program would be used for peaceful purposes (Reiss 1995a, 48). Further, Alfonsín used his visit with President-elect Neves to reinvigorate nuclear cooperation through greater transparency whereby both countries would open their nuclear facilities to joint inspections (Spector 1990, 225). Initial progress was slow, but given mutual suspicion and lingering doubts in both countries this was not too surprising. That Alfonsín persisted attested to his commitment to normalize Argentine-Brazilian relations.

This persistence set in motion a series of summits that produced a "veritable 'blizzard' of agreements on a wide range of policy issues" that included arrangements to divest the nuclear program of its military dimension (Schmitter 1991, 109). Meném's continuation of nuclear rapprochement was a further indication of a changed attitude in Argentina. Given his identification with Perónist political elements, few expected Meném to sustain nuclear cooperation with Brazil. However, Meném not only persevered on the course set by his predecessor, he deepened cooperation by signing the Foz de Iguazú agreement, the Guadalajara Accord, the Bilateral Agreement, and the

Quadripartite Safeguards Agreement. Moreover, Meném's decision to adopt a modified version of the Treaty of Tlatelolco and to set aside Argentine objections to accede to the NPT represented a sea change. In toto, these actions suggested that Argentina sought to shed its image as a potential regional nuclear peril and a destabilizing factor in world politics (Gjelstad 1996, 115).

2. Did specific people or groups who supported or sustained a nuclear weapons program lose prominence or depart from the national decision making arena?

Soon after his election Alfonsín dismissed the military director of CNEA, Carlos Castro Madero (Reiss 1995a, 48). During his eight-year tenure Argentina had made progress in developing a technical infrastructure that experts believed could eventually enable the country to produce enough enriched uranium and plutonium for several nuclear weapons (Spector 1990, 204-05). Alfonsín replaced Castro Madero with a civilian, Alberto Constantini (Reiss 1995a, 48). Much to Alfonsín's dismay, Constantini allied with nationalists in the Congress who opposed CNEA budget cuts and a funding halt for the Ezeiza plutonium extraction facility and the Pilcaniyeu uranium enrichment plant (Spector 1990, 224).

Nearly three years elapsed before Alfonsín, with the participation of the finance ministry, induced Constantini's resignation following a dramatic cut in CNEA's budget (Spector 1990, 227). A respected physicist, Emma Perez Ferreira, was appointed to succeed Constantini (Spector 1990, 390n26). Moreover, at this crucial juncture for the nuclear program, the military was preoccupied with two other issues: criminal charges against officers responsible for the dismal performance of the armed forces during the Falkland Islands war and legal action against those involved with the arbitrary arrests,

torture, and disappearance of political dissidents during the period of military rule (Spector 1990, 227). These events not only caused the prestige of CNEA, the military, and the nuclear program to decline, but facilitated civilian control of nuclear activities.

3. Did specific people or groups emerge who opposed nuclear weapons or nuclear research programs and influenced the national decision to be non-nuclear?

Alfonsín was key in reinvigorating the nuclear dialogue with Brazil, but Meném's role in sustaining and deepening the rapprochement was crucial. His accommodative stance vis-à-vis Brazil suggested that he perceived no overt military threat from his country's traditional rival. Further, Meném realized that the country's dire economic circumstances necessitated the use elsewhere of fiscal and intellectual resources consumed by the nuclear program (Reiss 1995a, 58). Meném also recognized that relations with the United States needed to be mended after the Falklands debacle, and one important way to accomplish that goal was to curtail Argentina's nuclear ambitions (Reiss 1995b, 14).

Meném was assisted by a small group of advisors in the foreign ministry who opposed Argentina's traditional isolation and advocated greater political openness and economic integration (Reiss 1995a, 60). This group recognized that continuing to resist the nonproliferation regime would impede these objectives. In short, this group grasped that "the international political environment had changed after the cold war, and [they] favored 'new thinking' on security, economic, and political issues" (Reiss 1995a, 60). The foreign ministry was joined by a coalition of like-minded actors in the finance ministry, banking, and the export industry who sought foreign investment and unhampered access to world markets (Sagan 1996/97, 71). In their judgment

unproductive defense and energy programs benefited only a discrete set bureaucrats, but not Argentina's broader interests.

4. Did socioeconomic factors contribute to a national decision to be non-nuclear?

The main objectives of the Meném administration were to overhaul Argentina's foundering economy and to integrate it into the global market (Reiss 1995a, 11). Meném and a coterie of advisors calculated that closer cooperation with the industrial states of the northern hemisphere would be a function not only of economic reform but nuclear restraint (Redick et al. 1995, 113). They anticipated that by modifying Argentina's nuclear policy they could attract foreign investors and persuade foreign governments to lift restrictions on the transfer of sensitive technologies that could be used for economic development (Reiss 1995b, 12). In other words, the price of economic revitalization and future prosperity was adherence to the nonproliferation regime. Meném's activities in this regard suggested that socioeconomic priorities figured prominently in Argentina's decision to restrain its nuclear options.

5. Did certain values upon which the government was based influence a national decision to be a non-nuclear weapons state?¹⁹

Argentina's decision to forgo the development of nuclear weapons did appear to be linked with the return of democracy in the country (Goldemberg and Feiveson 1994, 12). The military and bureaucratic motivations for the nuclear weapons program did not persist long after democracy was reestablished, and particularly after Brazil made a similar transition (May 1994, 535). Clearly Alfonsín and Meném recognized that end-states such as coexistence, peace, and material well-being necessitated, *inter alia*, accommodation, bargaining, compromise, and toleration. Once Argentina abandoned

military rule for democracy the political processes were in place to restrain the nuclear weapons ambitions of groups previously unaccountable to a popular mandate (Fischer 1996, 134). The ascendance of democratic governance in Brazil seemed to add momentum to these processes.

Some scholars have challenged the view that democratic transformation in Argentina was key for the decision to remain non-nuclear (Reiss 1995a, 68). They predicate their argument on two points. First, cooperative nuclear restraint first emerged in 1980, when Argentina and Brazil were ruled by military regimes. Second, the Alfonsín government resisted full-scope safeguards.²⁰ In light of these facts, Mitchell Reiss (1995b, 13) has suggested that the most important factor is the quality of political leadership rather than the type of government that rules a country. A vision of the future, a grasp of a country's strengths and weaknesses, and the capacity to consider alternative routes to the future are essential elements in the equation. According to this viewpoint, an "enlightened" military regime may be as disposed to nuclear restraint as a democratic government. Although this may be an accurate assessment, it is also indisputable that following the cessation of military rule in Argentina and the return of democracy, nuclear rapprochement with Brazil accelerated and appeared to make rapid progress after it too made the transition to democratic government.

C. Institutional-setting

1. Did the nuclear nonproliferation regime influence the national decision to be non-nuclear?

The nonproliferation regime and pressure to adhere to it influenced Argentine policymakers, but only marginally; they were not determining factors (Redick et al. 1995,

118). Stated differently, the existence of the regime may have influenced change by leaders who were already motivated by deeper concerns. The Argentine decision to restrain its nuclear ambitions was motivated far more by a desire to strengthen regional ties and to promote socioeconomic development than by the regime per se. Argentina's decision to abstain from developing nuclear weapons owed much more to internal and bilateral politics than to the international legal framework intended to constrain horizontal nuclear proliferation (Betts 1993, 113). In sum, the nonproliferation regime had only an indirect affect on Argentine decision makers (Reiss 1995b, 14).

D. Other Factors

1. Did any factor or factors in addition to those enumerated in the questions listed above influence the national decision to be non-nuclear?

Historically, the United States and other suppliers of nuclear materials and sensitive technology have imposed export restrictions on suspected proliferators in an attempt to restrain their nuclear aspirations. Technology denial strategies continue to be viewed as an effective method to constrain the horizontal spread of nuclear weapons. At the 1995 NPT Review Conference adherents to the treaty reiterated that transfer arrangements for special nuclear materials and equipment should require acceptance of international nonproliferation commitments by importing states (U.S. Arms Control and Disarmament Agency 1996, 3). Although such restrictions slow the proliferation of nuclear weapons, one lesson of export controls is that they are "no substitute for the political processes that eliminate or diminish the incentive to acquire nuclear weapons" (Fischer 1996, 134). In Argentina's case, American, Canadian, and West German pressure was constant, but not decisive in the country's decision to remain non-nuclear

(Reiss 1995a, 70). The change in Argentina's nuclear policy "is best seen as one element of a much larger and more comprehensive policy shift" (Reiss 1995a, 70).

Returning from the Brink: Brazil

A. Security Environment

1. Did the security environment change so that national leaders perceived less threat?

Brazil's primary concerns in its relationship with Argentina involved Perón's vision of unity among Latin America's Spanish-speaking peoples, the Río de la Plata dispute, the progress of Argentina's nuclear program, and the behavior of the Galtieri regime. Following Perón's death in 1974 and resolution of the Río de la Plata quarrel five years later, these issues ceased to have salience for Brazilian leaders. The military adventurism of the Galtieri government was short-lived and ultimately precipitated the downfall of military rule, which reduced the status of the military and any threat it may have posed for Brazil (Schmitter 1991, 107). The progress of Argentina's nuclear program remained the principal issue on Brazil's national security agenda.

Brazil, like Argentina, did not develop its nuclear program primarily to acquire nuclear weapons. However, the potential military content of Argentina's nuclear activities introduced another dimension into Brazilian calculations regarding the intentions of its regional rival. Although the possibility of military conflict between Argentina and Brazil was unlikely, Argentina's nuclear weapons options sustained suspicion and distrust between the two countries (Redick et al. 1995, 117). Nevertheless, Brazilian policymakers, like their Argentine counterparts, recognized that a nuclear arms race would consume substantial economic resources and was not in the long-term interest

of their country (Waisman 1975, 289). The absence of an overt military threat from Argentina as well as the economic burden and political ramifications of a nuclear weapons competition undoubtedly influenced President Figueiredo's visit to Buenos Aires in 1980 to initiate the nuclear dialogue. In sum, the actions of Brazilian leaders to restrain the nuclear program seem to have been motivated more by domestic economic and political factors, although improvements in the regional environment that began in the mid-1980s no doubt reinforced Brazilian perceptions that Argentina was not a security threat (Molander and Wilson 1994, 30).

2. Did additional factors associated with the security environment influence national leaders that their country should remain non-nuclear?

The positive and negative security assurances offered by the nuclear powers to countries like Brazil to encourage their adherence to the nuclear nonproliferation regime were aimed at the possibility of some unspecified threat in the future. As such, these assurances were offered in the same vein as they were to Argentina—as “sweeteners.” Beyond their symbolic significance, it is dubious if these assurances had a real impact on Brazil's decision to abstain from developing nuclear weapons.

B. Domestic Environment

1. Did a change in the attitude among national decision makers regarding military competition with potential adversaries influence a decision to be non-nuclear?

President Figueiredo's trip to Buenos Aires to initiate a nuclear discourse represented the first signal of a changed attitude among senior Brazilian officials regarding relations with Argentina. Further, Figueiredo's commitment to sustain the dialogue seemed to reduce suspicions harbored by both countries and may have

stimulated the desire to cooperate (Reiss 1995a, 53-54). The cooperative spirit seemed to fade between 1980 and 1983. In part, this was due to political instabilities and economic problems in Brazil, but Argentina's misadventure over the Falkland Islands and its announcement of the Pilçaniyeu facility were probably more responsible for this lapse than any reversal of official attitudes in Brazil (Reiss 1995a, 54).

In meetings with the Argentine president the actions of both Neves and Sarney indicated a preference to move the nuclear dialogue forward. In particular, Sarney's signing of the Joint Declaration on Nuclear Policy may be regarded as a landmark step in the nuclear rapprochement between Argentina and Brazil. However, Sarney moved slowly to impose restrictions on the nuclear program (Spector 1990, 248). Indeed, his announcement in 1987 that enriched uranium had been produced at IPEN appeared to be inconsistent with the emerging trend toward nuclear restraint.

Sarney's action may be attributed to two factors. First, the Brazilian Congress was increasingly proactive and Sarney required the military's support to deflate its assertiveness (Spector 1990, 248). Second, due to a plummeting approval rating the IPEN announcement, intended to highlight a national achievement, was an effort by Sarney to recapture popular support (Spector 1990, 248). Thus Sarney's motives were not based on a reversal of attitude regarding nuclear rapprochement, but in a stratagem to recover lost political stature domestically (Spector 1990, 248).

The clearest expression of a changed attitude among Brazilian officials regarding nuclear weapons occurred with the arrival of the Collor de Mello administration. In addition to an unprecedented series of agreements signed with Argentina, ABACC, and the IAEA to sustain cooperative nuclear restraint, Collor de Mello took immediate steps

to tether Brazil's nuclear program. Based on a report prepared by the outgoing Sarney administration, Collor de Mello informed the military service chiefs that he was terminating the "parallel program," and in September 1990 he ordered the Cachimbo shaft sealed (Homewood 1990, 14; Reiss 1995a, 58). The following December, a special commission was established by the Brazilian Congress to examine the "parallel program" (Reiss 1995a, 59). These acts reversed a decades-long absence of civilian oversight of Brazil's military establishment and its nuclear activities. Finally, Brazil's renunciation of the right to develop nuclear explosives and its adherence to an amended Treaty of Tlatelolco were perhaps the culmination of a national change of attitude regarding the appropriate forms of regional competition.

2. Did specific people or groups who supported or sustained a nuclear weapons program lose prominence or depart from the national decision making arena?

Immediately after assuming the presidency, Collor de Mello, a staunch opponent of nuclear weapons, dismissed CNEN's director, Rex Alves (Reiss 1995a, 58). During his tenure Alves forged close ties with the Brazilian military and was a fervent advocate of the "parallel program"--characteristics that were unsuitable in the Collor de Mello administration (Reiss 1995a, 58). Later, when opposition surfaced to the QSA, it was deflated by Admiral Mario Cesar Flores. A pivotal figure and Collor de Mello's Minister of the Navy, Cesar Flores instructed military officers and government officials who opposed the QSA to resign their positions (Reiss 1995a, 64). The tactic was not entirely successful, however, because it was the Senate that deferred ratification of the agreement for two years.

3. Did specific people or groups emerge who opposed nuclear weapons or nuclear research programs and influenced the national decision to be non-nuclear?

Collor de Mello was instrumental in extending the nuclear rapprochement undertaken by his predecessor (Reiss 1995b, 13). Given his opposition to nuclear weapons, it was not surprising that he moved expeditiously to renounce such devices and to subordinate all phases of the nuclear program to the executive branch (Solingen 1994, 161). Additionally, Collor de Mello held as main objectives of his administration the revitalization of the Brazilian economy and its integration into the world economy (Reiss 1995a, 60). Clearly neither objective could met as long as Brazil retained a nuclear weapons option that was opposed by states that advocated the nonproliferation regime and also controlled the financial assets and technology that could be used for Brazilian economic growth. Collor de Mello was not as disposed as Meném to defer to policymakers in the northern hemisphere, but "he understood that he could not keep his country indefinitely outside the international nonproliferation regime without paying a heavy political and economic price imposed by the most powerful and advanced industrial countries" (Reiss 1995a, 60).

Collor de Mello was assisted in his efforts by the foreign and finance ministries, particularly in his attempt to obtain ratification of the QSA. Officials in the foreign ministry realized that Brazil's action on the QSA was being observed by states that supported the nonproliferation regime, especially those countries that wielded the most influence internationally. Likewise, the finance ministry recognized that failure to ratify the QSA could place Brazil outside mainstream global society, with negative repercussions for foreign private investment and assistance from international financial

institutions. The Strategic Affairs Secretariat, the Brazilian equivalent of the U.S. National Security Council, also endorsed the QSA for many of the same reasons as the foreign and finance ministries (Reiss 1995a, 64). These government organizations were supported by bankers and businesses who opposed economically unproductive defense and energy programs (Sagan 1996/97, 71).

The Brazilian scientific community registered its opposition to the nuclear program as early as 1975 when the deal with West Germany was signed. The Brazilian Society of Physics and Brazilian Association for the Progress of Science believed that safety questions, a lack of adequately trained personnel, and reliance on foreign technology militated against the course set by the government (Goldemberg and Feiveson 1994, 13). The professional status and perseverance of several "dissident" scientists attracted media and public attention, which the regime was unable to suppress entirely (Goldemberg and Feiveson 1994, 13). Several years later when the "parallel program" was exposed by the press, these scientists denounced the effort. This time, however, the existence of a democratically accountable government provided an opportunity for the scientific community to express its opposition without restraint.

The Brazilian Society for the Advancement of Science obtained the signatures of 60,000 scientists who petitioned the Congress to adopt a constitutional amendment that prohibited the development of nuclear explosive devices (Reiss 1995a, 82n63). The Congress rejected this language, opting instead for an amendment stating that "all nuclear activity in the national territory will only be admitted for peaceful purposes, and approval in the Congress" (Goldemberg and Feiveson 1994, 13). Given the previous lack of legislative oversight of the nuclear program even adoption of the less restrictive

amendment was “quite extraordinary” (Goldemberg and Feiveson 1994, 13). In a further step to place all nuclear activities under civilian control, Collor de Mello appointed José Goldemberg, a physics professor and an outspoken critic of the nuclear program, to be director of CNEN (Reiss 1995a, 58). In toto, the efforts by these individuals and organizations showed that “knowledgeable and dedicated people and groups opposed to nuclear weapons production can make a significant contribution to stopping their country from ‘going nuclear’” (Albright 1990, 16).

4. Did socioeconomic factors contribute to a national decision to be non-nuclear?

As stated above, main objectives of the Collor de Mello administration were the revitalization of the economy and its integration into the world economy. Collor de Mello recognized, like Meném, that nuclear restraint enhanced the prospect for commercial activity within the region and with the industrialized countries (Reiss 1995b, 12). Indeed, Admiral Cesar Flores opined that “either Brazil modernizes and internationalizes or loses its place in the world and in history” (Goldemberg and Feiveson 1994, 14). Brazil’s president anticipated that modifying his country’s nuclear policy could attract foreign investors and convince advanced industrial states to remove restrictions on the transfer of sensitive technologies that could be used for economic development (Reiss 1995b, 12). The actions of the Collor de Mello administration demonstrated that in “an open democratic system with public scrutiny, military priorities are constantly being weighed against other, perhaps more pressing, social priorities” (Goldemberg and Feiveson 1994, 14). Collor de Mello’s activities indicated that socioeconomic factors were significant in the government’s decision to bridle its nuclear program.

5. Did certain values upon which the government was based influence a national decision to be a non-nuclear weapons state?

In Brazil, like Argentina, democratization swept away unaccountable military regimes that pursued a nuclear program with scant regard for the country's broader social or economic needs (Manning 1997-98, 72). Given Brazil's transition to democracy and the wane and eventual demise of behind-the-scenes activity by the Brazilian armed forces, the military and bureaucratic purposes served by the nuclear weapons program could not endure (May 1994, 535).²¹ One scholar (Reiss 1995a; 1995b) disputes whether democracy was key to the change in Brazilian nuclear policy. Yet, other scholars believe that the advent of democracy and the influence of values associated with this form of governance were instrumental in reducing tensions between Brazil and Argentina and accelerating both the pace and scope of cooperative nuclear restraint between these two countries (Fischer 1996, 134; Goldemberg and Feiveson 1994, 12; Schmitter 1991, 107-09; Serrano 1994, 240).

C. Institutional-setting

1. Did the nuclear nonproliferation regime influence the national decision to be non-nuclear?

The nonproliferation regime and external pressure to adhere to it were marginal influences in Brazil (Redick et al. 1995, 118). As in the case of Argentina, the existence of the regime probably indirectly influenced decision makers to take actions that were rooted in deeper concerns, such as economic development, modernization, and improved political relations. Like Argentina, Brazil's decision to restrain its nuclear ambitions owed more to domestic and bilateral politics than to any value ascribed to the regime per

se or external pressure to adhere to it (Betts 1993, 113). Beyond his own aversion to nuclear weapons, Collor de Mello's decision to restrain Brazilian nuclear activities may also be attributed to his advisors who believed that previous thinking "was the product of outmoded chauvinism of the country's military and that it caused unnecessary damage to Brazil's diplomatic relations..." (Spector 1990, 257-58). Thus nuclear restraint was not predicated on the merits of the nonproliferation regime, but on domestic and bilateral factors.

D. Other Factors

1. Did any factor or factors in addition to those enumerated in the questions listed above influence the national decision to be non-nuclear?

The potential imposition of restrictions by Germany on the export of nuclear technology to Brazil has been cited by one scholar as an important influence on the decision by Brazilian lawmakers to ratify the QSA (Reiss 1995a, 70). Other scholars, including some in Latin America who closely followed the progress of the Argentine-Brazilian rapprochement, have argued that it was the combined efforts of key Brazilian government officials and scientists who encouraged the Brazilian Congress to ratify the QSA (Redick et al. 1995, 115). Kinkel's visit may have only reinforced among Brazilian policymakers and scientific leaders what they already knew--the country required access to advanced technology for national development (Redick et al. 1995, 116). In turn, these officials and scientists persisted in their efforts to persuade the Senate to ratify the QSA. The potential loss of German nuclear assistance was another variable in the overall

technology acquisition equation, but probably was not a decisive factor per se, especially since much of the original deal with Germany had been cancelled earlier (Reiss 1995a, 56).

Approaching the Brink: North Korea²²

Genesis and Motivations

As a result of policies developed over four decades of rule under President Kim Il Sung, North Korea became one of the most heavily armed countries in Asia. Kim's goal of reuniting the Korean Peninsula, by force if necessary, posed one of the most severe challenges to peace in the region since the end of the Korean War. Moreover, his support of terrorism and his connections to states frequently ostracized by the world community for their violent acts established the Kim regime as more than a regional threat. North Korea's actions and attitudes created potential security problems for many countries, not just those located in Asia. When evidence appeared that the Kim government was acquiring the capability to develop nuclear weapons, and perhaps share this technology with states known for their propensity to use violence to settle disputes, a sense of foreboding settled on many national capitals (Cheung 1992b, 22-23; Fessler 1992, 480; Wolfsthal 1992b, 26).

Several motivations seem to have impelled the North Korean nuclear effort. First, a nuclear arsenal was judged to be an appropriate response to the nuclear umbrella extended over its foremost adversary, South Korea, by U.S. forces. From a North Korean perspective there were two reasons to possess nuclear weapons. They could be used to deter possible American nuclear retaliation in the event of a North Korean conventional assault against the South (Mazarr 1995a, 100). If deterrence failed, then the North could

use its nuclear weapons in counter-retaliation for an American nuclear response to a conventional attack (Mazarr 1995a, 100). Either way, North Korea would not be without recourse against an adversary allied with a nuclear-armed state.

Another motivation for acquiring a nuclear capability was that it would confer a degree of foreign policy autonomy (Spector and Smith 1991, 10). As long as Pyongyang depended on its Soviet and Chinese allies for security assistance, it lacked the latitude to pursue certain foreign policy paths, such as forced reunification of the Korean Peninsula, because it could never be sure of unconditional allied support (Spector and Smith 1991, 10). This particular motivation may have become more acute following the demise of the Soviet Union and Chinese statements that disputes on the peninsula should be resolved peacefully, which signaled Beijing's reluctance to assist North Korea in the event of armed hostilities (Hayes 1991, 11; Park 1994-95, 100). An independent North Korean nuclear force could alleviate these problems.

Additionally, nuclear weapons offered a lower-cost alternative to American and South Korean conventional forces arrayed against North Korea. In the mid-1950s, the United States advocated the deployment of tactical (i.e., battlefield) nuclear weapons by NATO to counter the conventional numerical superiority of the Warsaw Pact (Freedman 1983, 95). Similarly, Pyongyang envisioned nuclear weapons as a "great equalizer" against the qualitative superiority of American and South Korean conventional capabilities (Mack 1991, 94; Oh 1992, 173-74). As economic conditions in North Korea worsened and the defense budget was reduced by a staggering 58 percent in the early 1990s, nuclear weapons were perceived as a viable alternative to offset the conventional forces deployed in the South (Cheung 1992a, 24; Kim 1995, 21).

The acquisition of nuclear weapons was also seen as a tangible way to demonstrate the technical achievements of the Kim regime (Spector and Smith 1991, 10). By the 1990s, North Korea lagged behind the economic, political, and social progress made by some Asian countries, particularly South Korea. The demonstration of a nuclear weapons capability would establish that in at least one area requiring considerable scientific and engineering prowess that North Korea had surpassed all of its neighbors, except its Chinese ally. Further, this nuclear capability could be used to deter external interference in North Korean political affairs following the death of Kim Il Sung (Oh 1992, 174). In this way regime succession could be bolstered against possible military intrusions by countries intent on toppling the Kim dynasty (Spector and Smith 1991, 10).

Technical Infrastructure

Pyongyang's interest in nuclear research emerged in 1955 when representatives from the North Korean Academy of Sciences participated in an East European conference on the peaceful uses of atomic energy (Bermudez 1991, 405). The following year an agreement was signed with the Soviet Union to train North Korean scientists at the Dubna Nuclear Research Institute (Spector 1990, 121). A second agreement for nuclear cooperation was signed with the Soviets in 1959, and a separate arrangement was reached with the PRC in the same year (Spector 1990, 121). In 1964, a research center was established at Yongbyon, where a small Soviet-supplied reactor was installed that has been used for basic nuclear research and to produce radioisotopes for industrial and medical applications (Barnaby 1993, 95; Spector 1990, 121). At about the same time,

uranium prospecting commenced in North Korea with Chinese assistance (Bermudez 1991, 406). This early North Korean nuclear activity was modest and evoked little international attention.

The evidence to identify a specific date for Kim Il Sung's decision to initiate a nuclear weapons program is meager, but it may have occurred in the late 1970s because of events that transpired soon thereafter (Spector 1990, 121). In 1980, construction began at Yongbyon on a large gas-graphite reactor that used natural uranium fuel (Spector 1990, 123).²³ This type of reactor employs a simple design that is well understood (Gardner 1994, 33-34). Equally important, this reactor could use supplies of natural uranium and graphite moderators produced by the North Koreans, thereby obviating the need for foreign suppliers of nuclear materials and insulating the program from external interference (Albright and Hibbs 1992, 38). The Yongbyon gas-graphite reactor became operational in 1987 (Clifford and Hoon 1991, 18).

The proliferation risk associated with the natural uranium/gas-graphite design can be substantial because operation of the reactor can produce significant quantities of plutonium. Three specific features of the Yongbyon reactor aroused concern in the nonproliferation community. First, the design was similar to U.S. and British reactors operated in the late 1940s and 1950s to produce plutonium for their nuclear weapons programs (Chanda 1994b, 18). The heat produced by these reactors can be utilized to create steam for electrical power generation, but the reactor's primary purpose is plutonium production. Second, the large size of the reactor suggested uses that exceeded research requirements. The Soviet-supplied research reactor was rated at only four megawatts, but the natural uranium/gas-graphite reactor had an estimated power

level of thirty megawatts (Spector 1990, 139). Third, the reactor's power level was similar to India's Cirus reactor, which was used to produce the plutonium for the nuclear device detonated in 1974 (Spector 1990, 87).

North Korea also began construction of a second and larger natural uranium/gas-graphite reactor at Yongbyon and even an larger reactor of the same design at Taechon (Reiss 1995a, 234). Once fully operational these two reactors were estimated to be able to produce substantial quantities of plutonium (Reiss 1995a, 234). Suspicions about North Korea's intention to recover plutonium from spent reactor fuel rose in the late 1980s when a large facility was observed under construction at Yongbyon (McBeth, Chanda, and Islam 1989, 15). Estimates of the facility's capacity were deduced from its size and projections were made that the plant would be able to reprocess all the spent fuel from North Korea's reactors to recover plutonium (Reiss 1995a, 234).

From a nonproliferation standpoint North Korea could identify no legitimate uses for plutonium. North Korean officials seem to have attempted to convince the Director-General of the IAEA that they sought to recover plutonium for use in breeder reactors or in mixed-oxide fuel for light-water reactors, but their claims were dubious (Albright and Hibbs 1992, 38; Barnaby 1993, 98). Experts did not envision breeder reactors as viable energy sources for most countries for decades, and at this time North Korea did not possess light-water reactors and its prospects for acquiring this technology were not yet promising. The North Koreans would later insist that the facility was a "radiochemical laboratory" that was being constructed to economize on the country's nuclear fuel resources and to produce radioisotopes for use in the civilian economy (Oh 1992, 172). When Hans Blix, Director-General of the IAEA, toured the site in 1992 he observed that

if the facility was complete and operational, "then certainly...we would call it a reprocessing plant" (Oh 1992, 172).

The final piece of physical evidence that led some experts to conclude that North Korea was developing nuclear weapons concerned revelations about high-explosive tests conducted at a site on the Kuryong River (Hoon 1994a, 20). Given North Korea's apparent intention to recover plutonium the design of a nuclear weapon incorporating this material would employ the implosion technique. Weapons based on this design use chemical high-explosives to compress a sub-critical mass of fissile material like plutonium into a super-critical configuration to achieve a nuclear detonation (Cochran, Arkin, and Hoenig 1984, 26). Weapons utilizing this design are quite efficient, but their reliability depends on a uniform implosion of the sub-critical mass. Therefore extensive testing is usually required to ensure the reliability of the high-explosive component and the compression configuration.

According to an article in a South Korean magazine, *Monthly Chosun*, about seventy high-explosive tests occurred at the Kuryong River site near Yongbyon (Hoon 1994a, 20). North Korean officials stated that the explosions were used to shape metals that cannot be shaped using conventional methods (Albright 1994b, 53). Although this is an industrial technique used in several countries, another clue raised doubts about the North Korean explanation. Some information exists that North Korea may have attempted to acquire instruments used in high-explosive non-nuclear tests connected with nuclear weapons (Albright 1994b, 53). In toto, the circumstantial evidence associated with North Korea's nuclear activities from 1980 until resolution of the issue in late 1994 suggested an effort to develop nuclear weapons.

Position on the Nonproliferation Regime

North Korea acceded to the NPT in 1985, apparently under Soviet pressure (Sigal 1998, 22). Although Article III(4) of the treaty obligates each signatory to enter-into-force a full-scope safeguards agreement negotiated with the IAEA not later than eighteen months after discussions begin, North Korea did not fulfill this requirement. Once implemented the agreement would have enabled international inspectors to visit the Yongbyon and Taechon reactors, the radiochemical laboratory, and uranium conversion and fuel fabrication facilities to verify whether North Korean activities were intended to develop nuclear weapons. Pyongyang's refusal to implement safeguards was based on an assertion that the IAEA had presented North Korea with a particularly stringent set of controls that were not applied to other non-nuclear weapons states party to the NPT (Spector 1990, 129). The IAEA acknowledged its error and sent a corrected agreement to Pyongyang, thereby extending North Korean compliance with Article III(4) another eighteen months (Spector 1990, 129).

Following a diplomatic opening with North Korean representatives in Beijing in late 1988, the Bush administration outlined five conditions that Pyongyang would have to satisfy before bilateral relations could be normalized (Reiss 1995a, 235). One of these conditions was North Korean acceptance of IAEA safeguards on all nuclear activities.²⁴ North Korea responded slowly to Western overtures, and predicated progress on the nuclear issue to the withdrawal of U.S. nuclear weapons from South Korea and the issuance of a negative security assurance by the United States (Carlin 1994, 133).²⁵ The United States rejected the demands, arguing as a signatory of the NPT North Korea was obligated to agree to IAEA safeguards without attaching conditions (Spector 1990, 129).

The foremost question regarding North Korea's resistance to full-scope safeguards is: Why did Pyongyang accede to the NPT if it intended to conceal the full extent of its nuclear program? Several explanations have been offered to illuminate this inconsistency. First, accession to the NPT was a *quid pro quo* for continued Soviet nuclear assistance (Mack 1991, 95). More specifically, signing the treaty was a Soviet condition for supplying four nuclear power reactors to be built at Sinpo (Spector 1990, 126; Barnaby 1993, 96). Second, North Korean leaders may not have comprehended the pervasiveness of IAEA inspections when they signed the NPT. That is, they may not have realized the extent of their obligations under the treaty, believing them to be "no more onerous--or rigidly enforced--than those accepted in the 1970s" when Pyongyang agreed to allow the IAEA to perform occasional inspections on the Soviet-supplied research reactor at Yongbyon (Carlin 1994, 133).

There is, of course, a third explanation that is more cynical. Some observers have suggested that North Korea signed the NPT as a ploy to deflate international suspicions about the nuclear program (Spector 1990, 127). If this was the case, North Korea intended from the outset to stall implementation of full-scope safeguards for as long as possible in order to advance its nuclear program, perhaps to a stage where it could construct at least a limited number of nuclear weapons. In this situation Pyongyang would be in a better position to decide whether to retain its weapons or to use them to bargain for concessions from its potential adversaries.

Reversing Course: North Korea

In contrast to Argentina and Brazil, where a series of steps towards nuclear rapprochement led to institutionalized arrangements that reduced suspicion and distrust,

resolution of the North Korean nuclear issue entailed no similar progression. This is not to suggest that Argentina's and Brazil's return from the nuclear brink proceeded smoothly at every phase. Clearly, however, the unfolding of developments between these two countries was markedly different from the North Korean case, which involved "frequent pauses and numerous steps backward" (Lehman 1993, 257). This section examines the events and factors leading to North Korea's decision to restrain its nuclear weapons ambitions.

Between mid-1990 and early 1991, several diplomatic setbacks may have created circumstances conducive for a reevaluation by North Korean leaders of the country's nuclear program. In June 1990, Presidents Gorbachev and Roh Tae Woo of South Korea met in San Francisco for talks "that amounted to Moscow's de facto recognition of the Republic of Korea" (Spector and Smith 1991, 11). Three months later, the Soviet Union and South Korea established formal diplomatic relations (Kim 1991, 15). For North Korea, this was a profound change. One of the North's foremost allies had established ties to its principal nemesis, which suggested that a rift had emerged between Pyongyang and Moscow.

In October of 1990, the PRC and South Korea agreed to open offices in each other's capital for the purpose of economic and trade cooperation (Kim 1991, 15). Beijing promised to continue economic assistance to North Korea, but its leaders were suspicious the Chinese would eventually begin to distance themselves from Pyongyang (Spector and Smith 1991, 11). Conditions were emerging that were inauspicious for North Korea. Kim Il Sung's Stalinist-style government was increasingly at odds with developments such as Gorbachev's *glasnost* and *perestroyka*, democratization in East

Europe, and China's economic reforms. Moreover, South Korea's efforts to improve relations with the North's allies, initiated two years earlier under President Roh's policy of *nordpolitik*, had unquestionably yielded results (Spector 1990, 132). In short, North Korea's long voluntary isolation as a matter of national choice could become imposed isolation due to its national policies, including its position on the nuclear issue.

In early 1991, Soviet and Chinese officials stated that they would no longer block UN membership for South Korea (Reiss 1995a, 237). Since no obstacle now existed to full international recognition of South Korea, the North sought a separate membership for itself, which reversed a long-standing insistence on only one seat for one Korea in the General Assembly (Reiss 1995a, 237). Additionally, the Japanese government informed Pyongyang that it would not establish diplomatic relations, pay reparations from World War Two, or permit Japanese investments until North Korea adopted IAEA safeguards (Do Rosario 1991, 15; Chanda 1992, 10; Lehman 1993, 272). Clearly trends had emerged that did not bode well for North Korea.

In July 1991, Pyongyang agreed to accept IAEA safeguards and was expected to sign a formal agreement at the IAEA Board of Governors meeting two months later (Carlin 1994, 134-35). However, North Korean representatives responded angrily when several countries at the conference adopted a resolution calling for the North to comply with its obligations under the NPT (Carlin 1994, 135). Consequently, North Korea refused to sign the safeguards agreement. Nevertheless, North Korean statements were clear that "this was not a decisive about-face and that Pyongyang intended to get the process back on track fairly soon" (Carlin 1994, 135).

On September 27, 1991, President Bush announced the withdrawal of all U.S. ground- and sea-based tactical nuclear weapons deployed abroad.²⁶ The principal purpose of Bush's decision was to strengthen Gorbachev's position to withdraw tactical nuclear weapons from non-Russian republics (Beschloss and Talbott 1993, 446). An additional benefit of the U.S. decision was that it also included some of the nuclear weapons deployed in South Korea. In early October, an article in the North Korean party newspaper, *Nodong Sinmun*, signaled that there was no reason not to proceed with IAEA safeguards (Carlin 1994, 136). A follow-on decision by the United States to remove air-launched nuclear weapons created another inducement for Pyongyang to sign the IAEA safeguards agreement (Reiss 1995a, 237). A senior North Korean official later remarked that his country was "ready to receive nuclear inspection" (Hayes 1991, 10).

At this time, the United States urged South Korea to raise the possibility during prime ministerial meetings of bilateral inspections of each country's nuclear facilities (Reiss 1995a, 237). These inspections could be a complement and perhaps even an alternative to IAEA inspections (Reiss 1995a, 237). Americans harbored serious doubts about IAEA effectiveness following the Persian Gulf war. Iraq had been a signatory of the NPT, yet those safeguards failed "to detect a large, active program to acquire nuclear weapons" (Fainberg 1993, 5). There was persistent concern in the United States that the IAEA would not discern similar violations elsewhere (Fainberg 1993, 5). An ambitious North-South inspection regime was perceived as one way to assuage such concern.

In November, President Roh acted to create an additional incentive for North Korea to conform with the international nonproliferation regime. He stated that South Korea would not possess uranium enrichment or plutonium recovery facilities (Hoon

1991, 13). Further, Roh said that South Korea would not develop, possess, or store nuclear weapons (Hoon 1991, 13). In short, he assured leaders in Pyongyang that neither South Korea nor forces deployed in the country posed a nuclear threat to the North. Now, according to a senior Roh aide, "there [could] be no reason for the North to develop nuclear weapons or deny international inspection..." (Hoon 1991, 13). Secretary of State James Baker applauded Roh's overture to the North by noting that "the key to reducing tensions on the peninsula--and ultimately to reunification--is an active North-South dialogue" (Baker November 18, 1991, 844).

The following month North and South Korea signed the Agreement on Reconciliation, Nonaggression, Cooperation, and Exchange (Cumings 1992, 14). This accord, portrayed by some observers as "the most important agreement between the two since the division of Korea in 1945," included provisions for avoiding hostilities, for renouncing terrorism and any efforts to subvert the other government, and for reestablishing communication channels (Kwak and Joo 1993, 80).²⁷ The two countries also agreed that the 1953 armistice would remain in force until a formal peace treaty could be negotiated--a significant concession by North Korea (Kwak and Joo 1993, 80). Several days after the agreement was signed, President Roh announced that there were no more nuclear weapons deployed in South Korea (Reiss 1995a, 238).

On the last day of December 1991, the North and South concluded the Joint Declaration for the Denuclearization of the Korean Peninsula (Mazarr 1995b, 68). Under the agreement both sides agreed to abjure nuclear weapons and not to possess uranium enrichment or plutonium recovery facilities (Barnaby 1993, 97; Mazarr 1995b, 69; Spector 1990, 114). This agreement was more stringent than the NPT, since it would

require the North to dismantle the "radiochemical laboratory" at Yongbyon.²⁸

Additionally, the declaration provided for the creation of the Joint Nuclear Control Commission (JNCC), which would establish procedures to verify denuclearization of the peninsula (Hoon 1992, 10; Martel and Pendley 1994, 82-83).

During his traditional New Year's speech to his country, Kim Il Sung explained that North Korea would cooperate with the IAEA (Carlin 1994, 139). Several days later, Seoul announced that Team Spirit, an annual military exercise conducted with the U.S., would be cancelled (Mazarr 1995b, 69). On the same day, North Korea stated that it would sign a safeguards agreement with the IAEA, which occurred in Vienna on the last day of the month (Carlin 1994, 139). IAEA Director-General Blix noted that the agreement would subject all "nuclear materials and facilities in the DPRK--present and future--to IAEA safeguards verification" (Wolfsthal 1992a, 42). Almost immediately after signing the document, North Korean representatives at the IAEA opined that ratification could take several months (Wolfsthal 1992a, 42). U.S. officials insisted, however, that Pyongyang implement the agreement without delay in order to place North Korea's nuclear program under international safeguards (Awanohara 1992, 12).²⁹

North Korean decision makers were aware of the importance attached to the safeguards agreement, but may have delayed its ratification for two reasons. First, the suspicions of some Americans may have been correct. The North needed time to remove equipment and nuclear materials from Yongbyon before international inspectors arrived (Carlin 1994, 140). Second, the North Koreans may not have been engaged in a diversion effort, but envisioned the delay as a way to signal that they would not submit to international pressure to open their nuclear facilities (Carlin 1994, 140). Although the

precise reason for the delay has not been established, the Supreme People's Assembly ratified the agreement in early April (Reiss 1995a, 239).

In May of 1992, North Korea submitted to the IAEA an inventory of its nuclear material and design information for several nuclear facilities (Carlin 1994, 141). The list included a plant for the "separation of uranium and plutonium," an operational experimental power reactor, a larger reactor under construction--all at Yongbyon, and another large reactor under construction at Taechon (Wolfsthal 1992c, 18). The inventory also included a fuel rod fabrication plant at Yongbyon, two uranium mines, and two facilities for uranium milling, as well as plans to build a power plant with three reactors and a sub-critical facility at Kim Il Sung University (Wolfsthal 1992c, 18). The nonproliferation community reacted positively to Pyongyang's action because the inventory was not only provided to the IAEA before the deadline, it also contained more information than required by the safeguards agreement (Mazarr 1995b, 82-83).

Several days later Blix toured nuclear facilities in the North followed by an IAEA inspection team that would confirm information in the baseline declaration (Carlin 1994, 141). After the visit Blix observed that the progression of the North's plutonium reprocessing operation was perplexing because it involved no intermediate step, i.e., a pilot-scale plant between laboratory plutonium recovery and the industrial-level facility at Yongbyon (Chanda 1992, 9). Since the North Koreans listed no plutonium recovery pilot plant in their declaration to the IAEA the existence of such a site could not be ascertained without "special" inspections, which are used by the agency to gain access to a facility not listed on a baseline inventory (Reiss 1995a, 242). North Korean officials explained that it was standard practice for them to make the transition from laboratory-scale to

commercial operations without an intermediate step (Albright and Hibbs 1992, 39).

When discrepancies emerged between the North Korean declaration and IAEA findings, Blix requested access to two undeclared facilities to clarify the anomalies (Carlin 1994, 141). Pyongyang refused, alleging the facilities were military sites unrelated to the nuclear program, and therefore outside the purview of the safeguards agreement.

During a summit meeting in June, Presidents Bush and Yeltsin entreated North Korea to comply with its obligations under the agreement with the IAEA and the Joint Declaration with South Korea (Reiss 1995a, 243). Similarly, member states of the European Union informed Pyongyang that the prerequisites for normalizing relations were submitting to both IAEA and bilateral inspections (Reiss 1995a, 243). The announcement by the commander of U.S. forces in South Korea that the Team Spirit exercise would be resumed contributed to an impending showdown over the nuclear issue (Harrison 1994, 19). The hints of progress months earlier seemed to fade throughout the summer, primarily because of a South Korean proposal for challenge inspections, i.e., short-notice, demand on-site inspections of North Korean nuclear facilities (Mazarr 1995b, 86).

By mid-September, positive signs emerged again. Talks between the countries' prime ministers had progressed and agreements were signed to implement the reconciliation and nonaggression accord (Mazarr 1995b, 87). Additionally, President Roh downplayed the threat posed by the North's nuclear program, and in the JNCC an organizational scheme was developed to implement the bilateral inspection regime (Mazarr 1995b, 87; Reiss 1995a, 244). However, this progress was soon stifled by a U.S. and South Korean announcement that both sides had agreed in principle to hold the Team

Spirit exercise (Reiss 1995a, 244). The apparent motivation for this initiative was a belief in Seoul that deciding "in principle" to conduct the military exercise would enable South Korea to exert leverage in the JNCC, particularly on challenge inspections (Reiss 1995a, 244). The decision proved seriously flawed; subsequent JNCC deliberations failed to resolve any major issues (Reiss 1995a, 244). Further, as the year ended, a crisis seemed imminent (Mazarr 1995b, 93-94).

In February 1993, the IAEA Board of Governors asked Pyongyang for additional information to corroborate baseline data provided earlier (Carlin 1994, 141). Evidence obtained from IAEA sampling indicated that North Korea had extracted more plutonium, more frequently than the government had declared to the agency (Manning and Spector 1993, C3).³⁰ The Board also indicated the need for special inspections to gain access to certain facilities not identified on initial declarations given to the IAEA (Carlin 1994, 141; Mazarr 1995b, 96). Once again, North Korea refused the inspections at the sites identified by the IAEA, because they insisted the facilities were not nuclear-related (Smith 1993a, A16). Following a briefing in late February that revealed serious discrepancies about the North Korean nuclear program, the Board adopted a resolution seeking access to two sites for special inspections (Mazarr 1995b, 98). Specifically, the IAEA was interested in sites that appeared configured for the storage of waste material associated with plutonium recovery (Sanger 1994, 8).³¹

Pyongyang rejected the resolution, and in early April the IAEA declared North Korea to be "in noncompliance" with the NPT and referred the issue to the Security Council (Carlin 1994, 141; Smith 1993b, A23). The PRC opposed this move, stating that it would only make the matter more difficult to resolve (Mazarr 1995b, 116). In mid-

April, Pyongyang announced its intention to withdraw from the NPT, citing as the reason the "unjust and threatening acts by the United States and the agency that enforces the treaty" (Smith 1993a, A16). Given the three-month period required between a signatory's announcement to withdraw from the NPT and the cessation of its treaty obligations, nonproliferation proponents had a brief interval to persuade North Korean policymakers to reconsider their decision. President Clinton immediately decried the North's action and pledged that the United States and its allies would apply diplomatic pressure to reverse the decision (Smith and Reid 1993, A1). Similarly, Japanese Prime Minister Watanabe denounced North Korea's decision as "a challenge to the [NPT that] will have grave consequences" (Leopold 1993, 3). At this juncture, special inspections and resolving data discrepancies became secondary to preserving North Korean adherence to the NPT.

Korean specialist William Taylor speculated that Pyongyang was using the three-month withdrawal period to conceal evidence of nuclear activities that were inconsistent with declarations to the IAEA, which suggested that North Korea would not withdraw from the treaty (Leopold 1993, 3). Others believed that the withdrawal threat was a gambit to obtain American and South Korean concessions (Manning and Spector 1993, C3). Indeed, the letter that North Korea submitted to the UN announcing its withdrawal decision hinted that a solution was possible if the "unjust conduct of the IAEA against the DPRK [was] recognized and removed" and "U.S. nuclear threats" against the North ceased (Manning and Spector 1993, C3). Satisfying the first demand was problematic given the IAEA's position on resolving data discrepancies and conducting special inspections. However, meeting the North's other demand was more attainable to the

extent that concessions could be made on conducting Team Spirit--referred to by Pyongyang as "a nuclear war rehearsal threatening the DPRK" (Manning and Spector 1993, C3).

Some experts urged that the issue of North Korea's withdrawal from the NPT be referred to the UN Security Council for sanctions (Kay 1993, 12). It was even suggested that the Security Council apply Chapter VII of the UN Charter to impose an inspection regime similar to the one applied in Iraq (Kay 1993, 12).³² Although most were not as disposed to such forceful action, all agreed that North Korea's withdrawal from the NPT could have serious consequences. First, Pyongyang's decision could set a precedent for other near-nuclear countries to withdraw from the treaty (Kenny 1993a, 2). Second, South Korea and Japan might reconsider their non-nuclear policies, thereby setting in motion a nuclear arms race in Asia (Kenny 1993a, 2).

In mid-April, the Clinton administration signaled its willingness to conduct direct, senior-level discussions with North Korea (Reiss 1995a, 252). Pyongyang accepted the offer, and the meeting was scheduled for early June (Reiss 1995a, 252). Near the end of April, IAEA inspectors were permitted to perform maintenance on surveillance cameras and containment equipment at monitored facilities in North Korea (Reiss 1995a, 252).

On June 2, North Korean First Vice Minister Kang Sok Ju and American Assistant Secretary of State Robert Gallucci met at the UN (Mazarr 1995b, 120). Initial meetings between the two countries failed to convince North Korea to reconsider its withdrawal from the NPT (Jehl 1993, A3). When intimations about UN sanctions evoked North Korean ire, the United States hinted at concessions, such as possible "cancellation of high-profile military exercises with South Korea" (Jehl 1993, A3). Following several

days of meetings, the sides issued a joint statement on June 11 regarding peace and security on the Korean Peninsula and IAEA inspections (Reiss 1995a, 254). Specifically, assurances were provided against the threat or use of force, including nuclear weapons; for the impartial application of full-scope safeguards; for mutual respect of each other's sovereignty and noninterference in each other's internal affairs; and for the peaceful reunification of Korea (Sigal 1998, 260).

Only hours before the expiration of the 90-day period, North Korea's withdrawal from the NPT had been precluded. However, the joint statement also made clear that Pyongyang only "suspended" its decision to withdraw from the treaty (Lehman 1993, 266). North Korea's decision to remain an adherent to the NPT was contingent on resolution of issues with the IAEA (Lehman 1993, 266). Pyongyang indicated that routine inspections could continue at declared facilities, but the key issue—access to two undeclared sites – was not resolved (Lehman 1993, 266; Mazarr 1995b, 121).

Kang and Gallucci met again in July for a second round of talks. In a joint statement issued after the fifth day of meetings, the United States agreed to assist North Korea in obtaining light-water reactors (LWRs) as replacements for its natural uranium/gas-graphite reactors (Reiss 1995a, 254).³³ In exchange, North Korea agreed to renew discussions with the IAEA about safeguards and to resume talks with South Korea to implement the Joint Declaration (Davis January 10, 1994, 19). The United States based another round of deliberations with Pyongyang on fulfillment of these stipulations (Mazarr 1995b, 126). Moreover, obtaining the LWRs was premised on North Korean implementation of IAEA safeguards (Reiss 1995a, 254).³⁴ Special inspections were not mentioned in the joint statement.

In August, IAEA inspectors visited the Yongbyon reactor site, and problems emerged when the inspectors sought access to additional facilities (Reiss 1995a, 255). North Korean officials, suspicious of IAEA intentions, denied the request, stating their “unique” status under the NPT did not require fulfillment of certain treaty obligations (Reiss 1995a, 255). The restrictions on the inspectors’ activities led the IAEA to assert that “the overall degree of access is still insufficient for the agency to discharge its responsibilities” (Wolfsthal 1993b, 21). North Korea and the IAEA resumed discussions on inspections, but no progress was forthcoming (Reiss 1995a, 255). The North-South dialogue was also troubled. Pyongyang demanded that Seoul cancel the Team Spirit exercise scheduled for October and refused to discuss the bilateral inspection regime in the JNCC (Reiss 1995a, 256). Since U.S. stipulations for a third round of talks were not met, Washington cancelled the talks indefinitely (Reiss 1995a, 256).

In September, when the IAEA notified North Korea that certain inspections needed to be completed before the end of the month, Pyongyang indicated that the agency could conduct the same limited activities that it had performed earlier (Reiss 1995a, 256). An impasse occurred when Blix refused to accept what were perceived as token measures instead of comprehensive safeguards (Reiss 1995a, 256). Nevertheless, the United States, South Korea, Japan, and the PRC were hesitant to escalate the issue to the Security Council (Reiss 1995a, 256). A subsequent IAEA General Conference resolution urged North Korea to cooperate with the agency, but established no deadline (Reiss 1995a, 256).

During a tour in northeast Asia in October, Blix expressed serious concern about the IAEA’s capacity to sustain its activities at monitored sites in North Korea (Reiss

1995a, 256). At this point the principal issue became maintaining the continuity of monitoring at declared facilities. Blix's message was clear: even at declared sites material could be channeled to military purposes and the IAEA had reduced confidence in its ability to detect diversions (Reiss 1995a, 256). An already tense situation was exacerbated by an NBC News report that congressional and intelligence sources stated that North Korea possessed "enough plutonium...to make one to five atomic bombs" (Albright 1994a, 3).³⁵ Shortly thereafter, Pyongyang offered IAEA technicians access to surveillance equipment at Yongbyon for maintenance purposes, but refused any additional activities (Mazarr 1995b, 128). An IAEA official stated that the agency would no longer consent to limited inspections, because the usefulness of the information obtained was "steadily deteriorating" as a result of North Korea's position (Wolfsthal 1993c, 21).

On November 1, Blix reported to the UN General Assembly that North Korea was in noncompliance with the safeguards agreement, and he expressed concern about the viability of existing monitoring activities, but, importantly, he refrained from stating that safeguard measures had failed altogether (Mazarr 1995b, 132-33). The UN adopted a resolution urging North Korea to cooperate with the IAEA, but neither a deadline for cooperation nor sanctions were specified if cooperation was not forthcoming (Reiss 1995a, 258). Several days later, Kang proposed the idea of a "package solution of the nuclear problem" (Mazarr 1995b, 135). The Clinton administration deliberated on the elements that might be included in a comprehensive solution and adopted a two-part strategy. The first part would consist of a cancellation of Team Spirit in exchange for inspections at Yongbyon to preserve the continuity of IAEA safeguards arrangements

(Mazarr 1995b, 135-36). In the second part, North Korea's suspension of its withdrawal from the NPT, a schedule of routine inspections, and the principle of special inspections would be addressed as part of a "package" that could include U.S. and Japanese recognition of Pyongyang and investments by Americans, Japanese, and South Koreans in the North's economy (Mazarr 1995b, 136).

Following meetings in December, the North agreed at the end of the month to expand the scope of IAEA inspections (Reiss 1995a, 264). In early January 1994, North Korea announced that the IAEA could conduct inspections at seven, not just two, declared sites, but balked at inspections at the two suspected waste storage sites (Ching 1994a, 29; Reiss 1995a, 264). Nonetheless, the United States indicated its willingness to cancel Team Spirit and to hold a third round of talks with Pyongyang (Mazarr 1995b, 144). Although many North and South Koreans heralded the move as a breakthrough, American critics charged that the arrangement only restored the situation to where it was a year earlier and did not require Pyongyang to comply fully with its obligations under the NPT (Fialka 1994, A6; Sanger 1994, 1). Some believed that the Clinton administration's portrayal of the arrangement as a "diplomatic triumph," was nothing more than a retreat from the U.S.'s position on special inspections and a full accounting of North Korean nuclear activities (Sanger 1994, 8).

As the month progressed, Pyongyang examined a list of IAEA-proposed activities for the seven declared sites and deleted items that North Korean officials deemed inappropriate for the next inspections (Reiss 1995a, 264-65). After several requests by Pyongyang for more information from the IAEA, which were perceived in Washington as deliberate delays, the United States announced at the end of January that Team

Spirit would be held if the inspections did not occur (Reiss 1995a, 165). A deadline for North Korean compliance was set to coincide with the February 21 meeting of the IAEA Board of Governors when the matter could be referred to the Security Council for possible sanctions (Mazarr 1995b, 146). Pyongyang was warned by American and South Korean officials to anticipate sanctions, and even the Chinese now appeared less resistant to the idea (Mazarr 1995b, 146-47).

As the deadline approached and referral of the issue to the Security Council seemed imminent, North Korea and the IAEA agreed on February 15 that the agency could conduct inspections at the seven declared sites to "verify that nuclear material...had not been diverted since earlier inspections" (Wolfsthal 1994a, 33). The agreement did not mention the two suspected waste storage sites, and the North Korean representative at the IAEA admonished the agency not to insist on inspections at the sites because this was "totally out of the question" (Awanohara and Hoon 1994, 23; Wolfsthal 1994, 33). Near the end of the month, it was agreed that once inspections commenced and the North-South dialogue resumed to discuss a nuclear weapons-free peninsula, then Team Spirit would be cancelled and the United States and North Korea would announce a date in late March for the third round of talks to discuss "broader issues" (Chanda 1994c, 21; Reiss 1995a, 265). Regarding special inspections, an IAEA official said that the agency had "not forgotten about the discrepancies," but "that [was] something for later" (Chanda 1994c, 21). Clearly the IAEA had eased, at least temporarily, its previously inflexible position.

In early March, the Clinton administration announced a third round of talks for March 21 in Geneva in view of the resumption of the North-South dialogue and IAEA

inspections at Yongbyon (McCurry March 14, 1994, 151). The United States also concurred with Seoul's decision to suspend Team Spirit (McCurry March 14, 1991, 151). The North-South dialogue stalled almost as soon as it began (Mazarr 1995b, 148). Further, the IAEA inspections were troubling. Inspectors discovered that seals affixed in 1993 had been broken on a "hot cell" used to handle plutonium in the final stage of reprocessing, which suggested entry and use of the chamber (Chanda 1994d, 14). Since remote cameras monitoring the area had been inoperative for several months because North Korea had refused battery and film replacement, there was no record to establish what may have transpired at the site (Chanda 1994d, 14). Additionally, North Korean officials prohibited inspectors from taking samples from mechanical glove boxes to ascertain if any new reactor waste had been reprocessed to recover plutonium (Chanda 1994d, 15). Inspectors were also forbidden to use gamma-ray scans to determine if any fuel reprocessing had occurred in the "radiochemical laboratory" (Completion of inspections urged 1994, 39).

As a consequence of this situation the IAEA stated that it "was not in a position to verify that there had been no diversion of nuclear material" at the reprocessing facility (Wolfsthal 1994b, 27). The third round of U.S.-North Korean talks was cancelled, planning resumed for Team Spirit, and Seoul received six batteries of U.S. air defense missiles (Wolfsthal 1994b, 19). On March 21, the IAEA Board of Governors issued a resolution calling on North Korea "immediately to allow the [agency] to complete all requested inspection activities and to comply fully with its safeguards agreement" (Wolfsthal 1994b, 19). At this point, the United States advocated sanctions against

North Korea, but Japan, South Korea, and the PRC were opposed (Making haste slowly 1994, 16).

In April, North Korea suspended operation of the small reactor at Yongbyon and announced that it would remove spent fuel elements and refuel the reactor (Mazarr 1995b, 157). IAEA officials lauded Pyongyang's decision as a "key, milestone event" to resolve suspicions about the North's nuclear activity (Chanda 1994e, 14). The agency's enthusiasm was dampened when North Korean officials indicated that inspectors could observe the refueling, but could not extract samples from the spent fuel for analysis (Chanda 1994e, 14). This was a crucial decision, because analysis would have revealed whether the reactor waste was from the original fueling as North Korean officials claimed or from a follow-on load as some suspected. At issue was a 100-day shutdown in 1989 during which enough plutonium may have been removed for nuclear explosives (Chanda 1994e, 15). North Koreans insisted that only a small number of damaged fuel elements were removed containing 90 grams of plutonium, but U.S. officials alleged that between 8,000 to 9,000 grams were obtained (Blair 1994, 36). Analysis could have shown how much plutonium was actually recovered.

North Korea notified the IAEA in early May that refueling operations had commenced at Yongbyon, and inspectors were invited to "select and secure" spent fuel rods containing plutonium, but sampling could occur only after the third round of talks (Reiss 1995a, 269). On May 20, the Clinton administration agreed to talks with Pyongyang, but did not specify a date (Chanda 1994f, 16). Later it was learned that North Korea had accelerated the refueling and had placed spent fuel elements in a cooling pond in such a manner that ascertaining the age of the material inside the rods would be

nearly impossible (Reiss 1995a, 269). Gallucci commented that North Korea expedited the operation “deliberately to destroy evidence of its past nuclear activities” (Chanda 1994g, 15). Blix added that the action had “seriously eroded” the IAEA’s ability to determine how much plutonium North Korea had extracted from spent reactor fuel (Chanda 1994g, 15).

Blix informed UN Secretary General Boutros Boutros-Ghali about the problem (Reiss 1995a, 269). Nonetheless, most countries were reluctant to apply sanctions against North Korea. After consultations with other permanent members of the Security Council, South Korea, and Japan, the United States presented a modest economic sanctions strategy designed to provide Pyongyang with a graceful exit to the issue (Reiss 1995a, 270). All parties, except the PRC, endorsed the plan (Reiss 1995a, 270). Chinese Foreign Minister Qian Qichen offered that “sanctions [were] not a sensible choice, as they would only aggravate the crisis” (Chanda 1994g, 15).

As tensions began to rise once again, former President Carter visited Pyongyang in mid-June for talks with North Korean officials, including President Kim. As a result of these consultations, the North Koreans indicated a willingness to “freeze” their nuclear program, to allow IAEA inspectors to remain at Yongbyon, and to discuss dismantling of the two large reactors and the plutonium reprocessing facility (Sigal 1997, 36).³⁶ As Carter’s discussions in Pyongyang drew to a close, President Clinton acknowledged publicly that the North Koreans had offered new steps to resolve the nuclear issue (U.S. President 1994d, 1290). Clinton added that if “North Korea is genuinely and verifiably prepared to freeze its nuclear program while talks go on...then we would be willing to resume high-level talks” (Doherty 1994, 1639).

At the end of Carter's meetings in Pyongyang, President Clinton announced that the United States had received formal confirmation from North Korea that it would freeze "the major elements of its nuclear program while a new round of talks between our nations proceeds" (U.S. President 1994e, 1327). Clinton said that "in addition to addressing the nuclear issue, we are prepared to discuss the full range of security, political, and economic issues that affects North Korea's relationship with the international community" (U.S. President 1994e, 1327).³⁷ Toward that end, the United States suspended its efforts to seek UN sanctions against North Korea. Carter's breakthrough was not only a key step toward resolving the nuclear issue on the Korean peninsula, but it also extricated the United States from the sanctions debate, which had been unable to rally unqualified international support (Hoon and Morello 1994, 16). The PRC and Russia opposed sanctions, and Japan, never more than lukewarm to the idea, was even less disposed once its government was headed by a socialist (Ching 1994b, 32).³⁸

The third round of U.S.-North Korean talks was scheduled for early July, but Kim Il Sung's sudden death caused a delay until August. Once the round began, progress was forthcoming. In an agreed statement released seven days after the talks commenced, North Korea indicated that it was prepared to replace its natural uranium/gas-graphite reactors with a light-water reactor (LWR) (Wolfsthal 1994d, 23). The United States stated its intention to make arrangements for the North to procure the LWR as well as to obtain interim energy alternatives as compensation for shutdown of its reactors (Wolfsthal 1994d, 23). Further, the United States was prepared to give Pyongyang a negative security assurance (Wolfsthal 1994d, 23).

Importantly, several issues were absent from the agreed statement. First, the source of the LWR was not specified. Under the Nuclear Nonproliferation Act of 1978 and other domestic laws the United States was prohibited from direct nuclear assistance with North Korea, so another supplier of the LWR needed to be identified (Wolfsthal 1994d, 30). Second, the plutonium reprocessing plant at Yongbyon was not identified in the agreed statement, which left unclear its status in a settlement of the nuclear issue. Third, the subject of special inspections was absent from the statement, and nearly disrupted the outcome of the third round. After the talks, Kang said that North Korea "never recognised special inspections" (Ching 1994c, 36). Gallucci replied that "there [was] no chance that there will be a light-water reactor constructed in a country that does not accept full-scope safeguards" (Wolfsthal 1994d, 31). Later, the U.S. Secretary of State indicated that normalization of political and economic relations with Pyongyang depended on clarification of the North's past nuclear activities (Christopher September 12, 1994, 602). Clearly some significant differences remained between the two countries.

When the fourth round began in September, the talks nearly halted over several issues. First, the North Koreans expressed an interest in refueling the smaller reactor at Yongbyon and retaining the spent fuel elements (Mazarr 1995b, 177). Both actions would have been inconsistent with the agreed statement. Second, North Korean negotiators did not establish when construction would stop at the two larger reactors or the timing for IAEA inspections at the two nuclear waste sites at Yongbyon (Reiss 1995a, 275). Third, the North opposed a proposal of South Korea as the supplier of the LWR.³⁹ After weeks of negotiations, the United States and North Korea resolved these issues, as well as some other problems, and signed an Agreed Framework in late October that

President Clinton characterized as achieving "an end to the threat of nuclear proliferation on the Korean Peninsula" and "a crucial step toward drawing North Korea into the global community" (Gallucci October 31, 1994, 721; U.S. President 1994f, 2067).⁴⁰

The Agreed Framework will be implemented in three phases. During the first phase, which will last until shortly after 2000, North Korea will halt activity at its nuclear reactors and plutonium recovery plant and not construct any similar facilities (Mazarr 1995a, 97). Additionally, the spent fuel rods at Yongbyon will be stored in special containers, IAEA inspections will be conducted in accordance with Pyongyang's international obligations, and high-level talks will resume with Seoul (Mazarr 1995a, 97). In exchange the U.S. will issue a negative security assurance, act to obviate barriers to economic and political cooperation, and arrange for the transfer of two LWRs by 2003 (Mazarr 1995a, 98). Before nuclear components are delivered to North Korea for the first LWR, Pyongyang must be in complete compliance with IAEA safeguards (Mazarr 1995a, 98). Finally, to compensate for the loss of reactor-generated electricity, North Korea will receive 500,000 tons of fuel oil annually for heating and electricity production (Mazarr 1995a, 98).

In the second phase, which could last until 2003, shipment of spent fuel elements from Yongbyon to a foreign destination will commence as soon as the initial components for the first LWR arrive and will be completed before the LWR is finished (Mazarr 1995a, 98). Also, delivery of key nuclear components for the LWR will not occur until IAEA inspectors are granted access to two nuclear waste storage sites at Yongbyon (Mazarr 1995a, 98). During the third phase, expected to be completed after 2003, the

second LWR will be finished and North Korea will dismantle all natural uranium/gas-graphite reactors and the plutonium reprocessing plant (Mazarr 1995a, 98).

Despite the apparent achievements of the Agreed Framework, several criticisms were leveled at the accord because of perceived deficiencies that some believed North Korea could exploit (Dong-bok 1995, 91-101). First, the retention by North Korea for several years of nearly 8,000 spent fuel rods containing plutonium and an intact, albeit closed, reprocessing plant did not, for some observers, resolve the proliferation problem in the near-term (Albright and O'Neill 1995, 28). The possible existence of a clandestine pilot-scale plutonium recovery facility heightened this concern. Second, others asserted the Agreed Framework rewards and perpetuates for several years North Korea's violation of its NPT obligations, specifically denial of access to the two waste sites at Yongbyon until phase two of the agreement (Hoon and Holloway 1994b, 14; Towell 1995, 294). According to critics, not only does the Agreed Framework not compel North Korea's full and immediate compliance with the NPT, but it "rewards" Pyongyang's noncompliance with nearly \$5 billion worth of fuel oil and nuclear reactors (Sigal 1998, 9).⁴¹ Finally, given North Korea's past behavior, the Agreed Framework cannot guarantee that Pyongyang will not revert to obstructionist practices and impede IAEA inspections (Albright and O'Neill 1995, 29).

Proponents of the Agreed Framework argued that not only did it halt the North's suspicious nuclear activities, but the agreement achieves goals that go beyond the NPT (Wolfsthal 1994e, 25). Under the nonproliferation treaty Pyongyang could have reprocessed spent fuel on an industrial scale to recover plutonium and even exported the material to another country, as long as it was monitored by the IAEA and was not used in

nuclear explosives (Wolfsthal 1994e, 25). However, such activity, although entirely legal, would undoubtedly have been the source of considerable consternation in the nonproliferation community. By closing North Korea's reactors and its reprocessing plant, the Agreed Framework precludes the production and recovery of enough plutonium for four or five nuclear weapons annually (Gallucci December 12, 1994, 820; Wolfsthal 1994e, 25).⁴² Moreover, Pyongyang must eventually relinquish the spent fuel elements and comply with IAEA safeguards or jeopardize broader economic and political objectives (Towell 1995, 294). No agreement can guarantee the North's behavior, but the Agreed Framework offers the prospect of progress on an issue that reflected many "frequent pauses and numerous steps backward" (Lehman 1993, 257).

Several positive developments emerged soon after the Agreed Framework was signed. On November 1, Pyongyang announced that it had ceased plutonium reprocessing and reactor construction at Yongbyon (Wolfsthal 1994f, 18). Additionally, a U.S. delegation visited Yongbyon where they discussed with North Korean technicians various ways to prolong the safe storage of the corroding fuel rods (Wolfsthal 1994f, 18). It was also decided that two U.S.-North Korean working groups would meet in early December to discuss administrative matters and details of the LWR construction project and the establishment of liaison offices in each country's national capital (Wolfsthal 1995a, 26; Wolfsthal 1994f, 18).

During organizational meetings in December of the Korean Energy Development Organization (KEDO), the international consortium mentioned in the Agreed Framework to finance and to manage the LWR project, it was agreed that South Korea would play a central role in constructing the reactors (Wolfsthal 1995a, 20). When financing problems

foreclosed a Russian bid for less expensive reactors, Pyongyang agreed that KEDO could select the LWR contractor (Wolfsthal 1995a, 20). At the meetings it was also agreed that KEDO's membership could expand. The Japanese government urged European participation in KEDO, citing its earlier activities to support nonproliferation efforts in the former Soviet Union (Wolfsthal 1995a, 20). At the same time, the United States approached several Middle East countries to solicit their involvement as fuel oil donors (Wolfsthal 1995a, 20).

In late December, a U.S. Army scout helicopter strayed into the demilitarized zone between North and South Korea and was shot down (Sigal 1998, 195). One crewmember was killed; another was captured. The dead pilot's body was returned to American authorities, but North Korea delayed repatriation of the other soldier for almost two weeks (Sigal 1998, 197). Throughout this tense period, several congressmen recommended that the United States curtail implementation of the Agreed Framework until the North surrendered the captured American (Wolfsthal 1995a, 20). In spite of this situation, the Clinton administration declared that Pyongyang had complied with the agreement following IAEA certification that the reprocessing plant had been sealed and construction had halted at the Yongbyon and Taechon reactors (Wolfsthal 1995a, 20). In mid-January, the United States began delivery of nearly \$5 million worth of fuel oil and partially lifted decades-long sanctions against Pyongyang (Wolfsthal 1995a, 20).

A setback occurred in early February when North Korea rejected a draft contract that identified South Korea as the LWR supplier (Wolfsthal 1995b, 28). The primary issue was not the reactors, but the central role identified for South Korea in the project, which Seoul wanted "spelled out for the world to see" (Sigal 1998, 200). This was

Pyongyang's principal objection, i.e., the North sought to minimize the appearance that it depended on the South's largesse (Sigal 1998, 200). In early March, the North Korean foreign ministry opined that "even if [the disagreement] brings about the breakdown of the framework agreement...we will have nothing to lose nor to fear" (Wolfsthal 1995b, 28). The obvious inference to be made from the statement was that the North would resume its nuclear activities.

As the six month deadline (April 21) approached for KEDO to "make best efforts to secure the conclusion of a supply contract...for the provision of the LWR project," the United States pursued high-level discussions with North Korea to halt activities that appeared to be preparations to refuel the smaller reactor at Yongbyon (Medeiros 1995a, 25; U.S. Arms Control and Disarmament Agency 1994, 1). If Pyongyang resumed reactor operations it would end the "nuclear freeze" and leave the United States with few options apart from consulting with its allies about possible UN sanctions (Sigal 1998, 202). On April 22, Pyongyang assured Washington that it considered the deadline only a "target date" for the supplier contract (Sigal 1998, 202). However, the North continued to balk at South Korea as the source of the replacement reactors.

Several reasons seem to explain the North's position. First, the Pyongyang regime was loath to accept a settlement of the nuclear issue that identified its dependence on technology and financing from the South (Medeiros 1995a, 25). Additionally, by accepting South Korean reactors Pyongyang would necessarily need to admit a sizeable number of South Korean technicians who might introduce a segment of the North's society to the higher standard of living across the border. North Korean leaders demurred at the potential repercussions of this opening (Snyder 1995, 703). Further, even if the

North's leadership could set aside the country's technological backwardness and fear of exposing its population to foreign influences, accepting the South Korean LWRs could make Pyongyang vulnerable to political pressure from Seoul (Medeiros 1995a, 25). A final explanation for the North's position, unrelated to the other reasons, concerned a tactic to entrap the United States in protracted negotiations in order to enhance direct and improved relations between the two countries (Medeiros 1995a, 25).

Seoul wanted to refer the reactor issue to the UN Security Council for sanctions, but the United States was reluctant because of possible Chinese and Russian reactions (Chanda 1995, 17). Beijing sought closer relations with Kim Jong Il, Kim Il Sung's successor, so it was unlikely it would support sanctions (Chanda 1995, 17). Russian leaders, whose efforts to sell reactors to Iran had been rebuffed earlier by the United States, were no doubt equally unwilling to endorse sanctions (Chanda 1995, 17). Moreover, some American officials were concerned that applying sanctions at this point would only raise tensions (Chanda 1995, 17). As the United States began meetings with North Korea to resolve the reactor supplier dispute, a separate issue emerged.

The CIA reported that approximately 20 percent of the fuel oil delivered in January had been diverted to industrial use instead of heating and electricity production as specified in the Agreed Framework (Medeiros 1995b, 28). Secretary of State Christopher informed the Congress that unless North Korea complied with the agreement all shipments of fuel oil would cease (Medeiros 1995b, 28). The United States proposed a monitoring system to prevent further diversions. Pyongyang agreed "in principle" to the arrangement, but refused to establish a date to implement the system until after the reactor supplier issue was settled (Medeiros 1995b, 28).

The impasse over the reactor issue was resolved several days later when North Korea consented to a supplier agreement with KEDO that did not mention South Korea, although KEDO was permitted to choose the South to supply the reactors (Sigal 1998, 202). In mid-June, President Clinton announced that the reactor dispute had been solved, and that KEDO would select the reactor design and prime contractor for the project (U.S. President 1995a, 1050). In a joint statement the United States was identified as the "principal point of contact" and an American firm was specified to be LWR "program coordinator" (Medeiros 1995c, 23). The statement also indicated that KEDO would select the reactor type. Soon after the joint statement was released, the KEDO Executive Board passed a resolution stating that "two reactors of the Korea standard nuclear plant model...will be...in the prime contract" (Medeiros 1995c, 23). Specific reference was made to reactor models in use at Ulchin, South Korea (Medeiros 1995c, 23).

The agreement resolved the reactor supplier issue, but South Korean President Kim Young Sam confronted serious criticism from political opponents because Seoul's "central role" was not mentioned in the joint statement (Hoon and Holloway 1995, 22). Moreover, some South Korean politicians believed that U.S. negotiators had exercised too much latitude to achieve a deal with Pyongyang. They pointed out that South Korea was expected to pay the largest share of costs associated with the LWR project, yet Seoul's important role in solving the proliferation problem on the peninsula was not acknowledged formally (Hoon and Holloway 1995, 22). Similarly, some U.S. congressmen criticized the agreement for marginalizing America's long-time ally, while simultaneously edging Pyongyang closer to attaining one of its principal goals—direct relations with the United States (Hoon and Holloway 1995, 22).⁴³

Despite criticisms of the Agreed Framework and the reactor settlement, meetings between KEDO and North Korea moved the LWR project forward (Medeiros 1995d, 22). However, inadequate funding to purchase fuel oil and to conduct preliminary work on the reactors jeopardized the Agreed Framework (Medeiros 1996a, 24). The inability of Japan and South Korea to allocate funds for off-site work on major LWR subsystems imperiled the timetable for delivery of the reactors (Medeiros 1996a, 24). Further, congressional reductions to Clinton budget requests were a major factor leading to insufficient funds to purchase fuel oil (Medeiros 1996b, 22). Although the Japanese government subsidized the financial shortfall to buy oil, Tokyo indicated that since it, along with Seoul, would pay for most of the LWR effort that Washington should be responsible for ensuring oil shipments to the North (Medeiros 1996b, 22). KEDO and Pyongyang have signed protocols to continue implementation of the Agreed Framework, and in August 1997, excavation began at Sinpo for the LWRs. Nevertheless, funding remained tenuous to fulfill obligations undertaken by members of the international consortium to end the threat of nuclear proliferation on the Korean Peninsula.⁴⁴

Returning from the Brink: North Korea

A. Security Environment

1. Did the security environment change so that national leaders perceived less threat?

As the Cold War waned and finally ended Pyongyang probably perceived a security environment that was less secure than at any time since the end of the Korean War. The North's alliance situation and a shift in the military balance to favor South Korea undoubtedly contributed to a rising sense of vulnerability (Mack 1995, 44-45).

The initial manifestation of this insecurity may have appeared during a trip to North Korea by Soviet Foreign Minister Shevardnadze in September 1990. During that visit, which occurred only three months after President Gorbachev met President Roh for talks that were tantamount to de facto recognition of Seoul, the North Korean foreign minister implied that Pyongyang might develop nuclear weapons if the Soviet Union normalized relations with the South (Spector and Smith 1991, 11). Later, when Moscow reduced military transfers to North Korea the chasm that had opened between these once close allies grew wider (Spector and Smith 1991, 11). Finally, in early 1993, the announcement by Russian Deputy Foreign Minister Kunadze that Moscow would no longer honor the defense components of the 1961 Treaty of Friendship and Cooperation seemed to sever the last military ties between the two countries (Mazarr 1995b, 96).

In addition to the loss of Moscow as an alliance partner, Pyongyang's sense of security was probably shaken, albeit not to the same extent, by a perceived weakening of Beijing's commitment. Although a rift seemingly emerged between the PRC and North Korea when Chinese leaders became frustrated with Pyongyang's intransigence on the nuclear issue, there was little doubt that Beijing still pledged some measure of security assistance to the Kim regime (Mazarr 1995b, 115; Sigal 1998, 118). However, North Korean decision makers could not be certain of Chinese military intervention on their behalf under every contingency. Chinese leaders had been explicit that disputes on the Korean Peninsula should be resolved peacefully and that Pyongyang should refrain from hostilities with the South (Park 1994-95, 100).

North Korea maintains a quantitative edge over the South in conventional military capabilities, but the effectiveness of these forces could be hampered by several deficiencies. Special operations groups are not integrated operationally with regular units, the logistic structure appears inadequate to support sustained combat, the command-and-control system is sparse, and timely intelligence analysis is poor (Bracken 1993, 143-45). South Korea's military suffers from its own deficiencies, but it is generally believed to be superior to the North's military establishment (Bracken 1993, 145; Sigal 1998, 20). Moreover, the presence of nearly 40,000 American military personnel armed with modern equipment erodes any advantage that the North's quantitative edge may have conferred. The continued extension of the U.S. nuclear deterrent to South Korea completes the military forces equation. In toto, North Korea's security environment has changed, but in ways that probably cause policymakers in Pyongyang to perceive more, not fewer, potential challenges to their country's security.

2. Did additional factors associated with the security environment influence national leaders that their country should remain non-nuclear?

The possibility that North Koreans might perceive threats to their national security has rarely been taken seriously by U.S. and South Korean officials (Mack 1994, 28). Yet, as one researcher who specializes in the region has pointed out, the North:

has been threatened with U.S. nuclear weapons for decades, the conventional military balance is moving inexorably against it, the annual Team Spirit exercise [was] a rehearsal for war on the peninsula, and the regime has effectively lost its allies--China, as well as Russia. (Mack 1994, 28)

Under these circumstances it is not surprising that Pyongyang placed considerable importance on American negative security assurances (Sigal 1998, 25). These assurances

have taken several forms: the withdrawal of tactical nuclear weapons from South Korea, the suspension of Team Spirit exercises, and the provision in the Agreed Framework that the United States provides "formal assurances to the DPRK against the threat or use of nuclear weapons by the U.S." (U.S. Arms Control and Disarmament Agency 1994, 2). Clearly American security assurances were essential "to convince an insecure North Korea to abandon nuclear-arming" (Sigal 1998, 25).

Other factors associated with the security environment did not seem to have affected Pyongyang's eventual decision to return from the nuclear brink. Although economic sanctions loomed as periodic possibilities to induce North Korea to comply with its NPT obligations, these threats probably had little influence on decision makers in Pyongyang. North Korea was already a state that had isolated itself from much of the global economy; thus, sanctions would have had little effect (Mazarr 1993, 9). Also, economic sanctions are difficult to apply so narrowly that they affect only the regime and not the population (Mack 1994, 32). Moreover, even if sanctions would have affected North Korean society there was little that the population could have done to sway a government that is nearly impervious to popular pressure (Mack 1994, 32).

Additional considerations also militated against economic sanctions, principally the positions of countries in the region. Pyongyang's warnings that sanctions could lead to war necessarily created pause among key states in Asia (Mack 1995, 22). North Korean statements could have been interpreted as mere posturing, but neither the PRC nor South Korea was prepared for the possibility that sanctions could have been the catalyst for an outbreak of violence. Beijing's policymakers opposed sanctions because they would "force China to pick sides, disrupt its economic modernization, and raise new

questions in the power centers of [the country] about China's future course" (Mazarr 1995b, 114). Similarly, South Korean officials sought to avoid any action that could lead to the unplanned collapse of the Kim regime. Seoul preferred reunification through gradual economic and political decentralization in the North, not reunification by absorption as occurred between West and East Germany (Mack 1994, 31).

The Japanese government was also reluctant to abandon diplomacy for more forceful measures against North Korea. Leaders in Tokyo had little enthusiasm for sanctions because they risked a confrontation with the pro-Pyongyang Korean community (the *Chongryun*) in Japan (Mack 1995, 21). The risks were clear: political violence and, equally important, the possibility of revelations about political corruption involving the *Chongryun* and Japanese politicians, notably socialists in the governing coalition (Sigal 1998, 74). Aside from these considerations, decision makers in some countries seemed to recognize that a flimsy basis existed for economic sanctions against the North, since the intent to acquire nuclear weapons was not necessarily a threat to global peace. The UN had not applied economic sanctions against other countries that had nuclear programs that most experts agreed were intended to produce nuclear weapons or at least to retain the option to do so (Mack 1995, 22).

In addition to economic sanctions, the possibility of a "surgical" air strike was considered briefly in 1994 to halt the reprocessing of spent reactor fuel to recover plutonium. It is not clear whether Pyongyang was aware that this option was being debated, but since Washington consulted Beijing for its opinion North Korean leaders may have been informed that the United States was contemplating military action (Sigal 1998, 118). The PRC, South Korea, and Japan all opposed the idea, as did many

American policymakers, for several obvious reasons. First, without a Security Council mandate, which was highly problematic given the possibility of a Chinese veto, a military strike would have been a gross violation of international law (Mack 1995, 22). Second, the attack against a nuclear facility could have dispersed large quantities of radioactive material over a potentially wide area (Mazarr 1993, 9). Third, a military strike could have precipitated what most were endeavoring to avoid--war (Mazarr 1993, 9). In short, outside a small group of critics of the Clinton administration's approach to resolve the crisis, the air strike option was a momentary interlude not taken seriously by most decision makers inside or outside Washington (Sokolski 1995, 447). If Pyongyang was aware of the consensus against air strikes North Korean leaders were probably not overly concerned about the option being executed.

B. Domestic Environment

1. Did a change in the attitude among national decision makers regarding military competition with potential adversaries influence a decision to be non-nuclear?

Historically, North Korean officials have revealed little about their national affairs to outsiders. Moreover, what information does emanate from Pyongyang has often been intended to deceive the international community rather than to clarify the leadership's policy positions (Oh 1992, 170). In the area of national security this practice has been the norm, which renders conclusions regarding changes in attitudes about military competition difficult to make. However, one may proceed from what is known to deduce some tentative conclusion on this subject.

When the North attacked the South in 1950, it believed that it "could achieve strategic, operational, and tactical surprise and, therefore, promote a quick victory,

allegedly unifying the country in three weeks" (Park 1994-95, 99). Decision makers in the North also appeared to believe that in light of Secretary of State Acheson's speech that delineated an American "defense perimeter" in the Pacific excluding South Korea that the United States would not intercede to halt the attack (Brodie 1973, 59). Finally, at that time, Pyongyang was sustained by steadfast allies upon whom it could turn for material and ideological support. Today, none of these circumstances is extant.

One of North Korea's closest allies no longer exists and its successor government has taken steps to establish that it is not obligated to assist Pyongyang militarily, while Beijing has made it clear that it does not support military solutions to political problems on the peninsula. Additionally, even if North Korea decided to act alone, it is highly unlikely that Pyongyang could achieve a quick victory given the forces arrayed against it. Such a conflict would probably resemble the Iran-Iraq war of attrition, which, for reasons cited above, North Korea could not win (Bracken 1993, 145). Further, nuclear weapons would not change this situation for North Korea. Any use of such weapons against the South, especially American forces, would undoubtedly provoke a decisive U.S. response that could portend the end of the Pyongyang regime (Park 1994-95, 100). Given these circumstances, it would not be unreasonable to conclude that the North's attitude about military competition with the South has changed.

In addition to these factors, other, more subtle, indications have emerged to suggest that North Korean policymakers have altered their outlook regarding military competition. When Pyongyang reversed its insistence on only one membership for one Korea in the UN and accepted a separate seat in the General Assembly this may have been a first, tentative step to shift from near exclusive reliance on confrontation to

political dialogue (Sigal 1998, 23). North Korea's overture to Japan for diplomatic relations may also have been a signal of a policy shift (Sigal 1998, 23). Similarly, Pyongyang's decision to engage Washington on broader economic and political issues rather than continuing to demand troop reductions also may have been indicative of policy change (Sigal 1998, 23).

According to Leon Sigal (1998, 24) these changes may be traced to 1990. Kim Il Sung is reputed to have opted for a three-point policy position advocated by pragmatists in the regime. First, Pyongyang would seek a controlled opening to the West for investment to stimulate economic growth and for "a relaxation of the armed confrontation to reduce the country's defense burden" (Sigal 1998, 24). Second, the regime would attempt to normalize relations with the United States, "the one country that could restrain the military threat from South Korea and open doors to the rest of the world, politically and economically" (Sigal 1998, 24). Finally, "instead of trying to delegitimize and destabilize South Korea or pursuing its long-stated aim of unifying the peninsula, the North was prepared to coexist with the South" (Sigal 1998, 24). The long-term implications of this policy change, if it is both genuine and durable, are profound. It would signal a reversal from a decades-long posture predicated on military competition to potentially constructive engagement with long-standing foes.

2. Did specific people or groups who supported or sustained a nuclear weapons program lose prominence or depart from the national decision making arena?

Between late 1990 and early 1993, the influence of an "old guard" located primarily in the armed forces, the military-industrial complex, and the nuclear establishment seemed to wane (Harrison 1994, 19; Reiss 1995a, 247). The "old guard's"

influence was ostensibly diminished by a group of technocrats and pragmatists who asserted that unfolding political and economic changes manifested a need for Pyongyang to reassess its policies (Harrison 1994, 18). Their agenda included a two-part strategy to open North Korea economically, primarily the export-oriented special economic zones, to American, South Korean, and Japanese investment, followed by a reduction in the defense budget, principally the nuclear weapons program (Harrison 1994, 19). Apparently this group prevailed over the "old guard" at the December 1991 Workers' Party Central Committee meeting when reform leaders argued that agreeing to IAEA inspections would lead to economic and political normalization with the United States and Japan (Harrison 1994, 19). Hard-liners supposedly agreed to the scheme, believing that the plan would not achieve results and the reformers would be discredited (Harrison 1994, 19).

By early 1993, the influence of the "old guard" seemed resurgent (Reiss 1995a, 247). Selig Harrison (1994, 19) has argued that the reform strategy required "a continuing series of meetings, with trade-offs along the way involving concrete U.S. economic and security commitments," to convince the "old guard" that North Korea should abandon the nuclear program. Because the United States based its approach to resolving the nuclear issue on North Korean restraint as a prerequisite for economic and security commitments the reformers' strategy was probably crippled from the outset.⁴⁵ However, this did not mean that the "old guard" regained entirely the influence that it seemed to exert on the nuclear program. Influences were exerted at senior policymaking levels that may have had a lasting affect on the decision to halt the nuclear weapons program.

3. Did specific people or groups emerge who opposed nuclear weapons or nuclear research programs and influenced the national decision to be non-nuclear?

The rise of the Institute for Peace and Disarmament (IPD) as the primary think tank to formulate new foreign policy approaches and to propose new policy ideas seemed to have an important influence on resolution of the nuclear issue (Mansourov 1997, 223). The IPD's senior staff, some of whom were educated abroad, had access to information about foreign developments, traveled extensively, and often raised "trial balloons" concerning possible North Korean policy positions (Mansourov 1997, 223). The Institute was well-funded and generally free to discuss any foreign policy issue that concerned the Kim regime (Mansourov 1997, 223). Following changes in the political and security environments, the IPD urged the International Department of the Korean Workers' Party (WPK) "to adopt a new strategic posture vis-à-vis the international community" (Mansourov 1997, 223). Proposals included establishing diplomatic and economic relations with the West, specifically the United States and Japan, by cooperating with the IAEA; engaging Seoul in a political, economic, security, and cultural dialogue; and adopting a new policy position on the nuclear issue (Mansourov 1997, 223).

Additionally, the stature and influence of Kim Yong-sun, who promoted an opening to the West and was Director of the Central Committee of the WPK, also grew as a result of his involvement with the nuclear issue (Mansourov 1997, 225; Sigal 1998, 49-50). In April 1992, he was promoted to Alternate Member of the Politburo of the WPK (International Affairs) for his instrumental work in cancellation of the Team Spirit exercise and other discussions with the West (Mansourov 1997, 225). Due to his responsibilities, Kim was exposed to the concepts developed at the IPD, and he had

"frequent access" to Kim Jong Il, with whom he shared possible innovations in the foreign policy area (Mansourov 1997, 225). His capacity to side-step normal bureaucratic channels of policymaking enabled Kim to introduce new policy ideas to the senior leadership (Mansourov 1997, 225).

In early 1993, the joint U.S.-South Korean announcement to hold Team Spirit and increased pressure from the IAEA diminished prospects for progress on the nuclear issue. Despite these apparent setbacks, some North Koreans attempted to salvage the situation, until a small parliamentary delegation was denied visas to enter the United States to participate in a congressional meeting in early February (Mansourov 1997, 233). As one scholar who had experience in Pyongyang put it, "the last attempt of North Korean doves to avert [a] confrontation was undercut by American hawks" (Mansourov 1997, 233). A new political consensus emerged in the North and was "supported by a new coalition...tilted in favor of conservative patriarchs and the military" intent on resisting "the U.S.-backed IAEA's plotting and bullying..." (Mansourov 1997, 233).

Nevertheless, the possibility of nuclear restraint was not scuttled entirely. Kim Jong Il "appears to have played a key role in the inter-Korean dialogue and in the moves toward safeguards as well" (Carlin 1994, 138). His position was probably bolstered by an earlier WPK Central Committee plenum that supported a North-South dialogue and a move to accept IAEA safeguards (Carlin 1994, 138). This was also the same plenum that placed Kim Jong Il in charge of the army, whose support could be critical for progress in the dialogue and acceptance of safeguards (Carlin 1994, 138). Kim's behavior prior to assuming the leadership of North Korea provided few clues to suggest he was a reformer, but he may be more pragmatic than his late father (Mack

1995, 45). If so, the change in leadership should incline Pyongyang "to place economic security above military security" (Mack 1995, 45).

4. Did socioeconomic factors contribute to a national decision to be non-nuclear?

The decline of communism globally coincided with an international transformation that posed a significant challenge for North Korea. The emergence of global economics has largely replaced ideological disputes as a primary agenda item for most governments. Trade relations are increasingly a central feature of international politics. For a state to be a beneficiary of this transformation and to be "a significant player on the new international scene, [it] is strengthened if it is perceived to be moving in the same direction as the broader international community--in the direction of...the rule of law, the peaceful resolution of disputes, and the nonproliferation of particularly dangerous weapons" (Lehman 1993, 260). Clearly the nuclear issue created a dilemma for Pyongyang: persist in activities to develop nuclear weapons or relinquish the option for economic benefits that could follow from normalized relations with other countries, principally the advanced industrial states.

At the height of the crisis over North Korea's nuclear program, the country was experiencing severe economic conditions. By 1993, the economy had contracted for the fourth consecutive year, so that GNP was less than one-tenth of South Korea (Mack 1994, 29). Oil supplies lagged behind demand, and industrial production decreased to 40 percent of capacity (Mack 1994, 29). Grain production declined, and the central government urged the population to subsist on two meals daily (Mack 1994, 29).

In spite of these circumstances, the Kim regime still retained control of the country, which may account for the government's inflexibility on the nuclear issue.

Pyongyang probably calculated that it had time to “see if it [could] extract any further concessions from Washington” in exchange for abandoning its nuclear program (Mack 1994, 29). If this was the case, the thinking of North Korean decision makers was evolving to a point where nuclear weapons were valued less as a military instrument and more as a lever to obtain economic assistance from the United States and Japan (Hoon 1994a, 22). If so, the long-term “economic rewards of giving up the nuclear option may [have been] sufficient to...induce the North to abandon its bomb program” (Mack 1994, 33). In sum, what began as an effort to develop a nuclear arsenal seems to have become a lever to obtain concessions for socioeconomic development, even though potential threats remained and may have actually worsened from a North Korean perspective (Mazarr 1995a, 100).

5. Did certain values upon which the government was based influence a national decision to be a non-nuclear weapons state?

Although the fundamental principles of Kim Il Sung’s thought and the “trappings of the socialist state” remain in North Korea, some values associated formerly with the regime have changed (Snyder 1995, 703). Coexistence with the South has gradually supplanted the bellicose themes and statements that emanated previously from Pyongyang (Sigal 1998, 138-39). Despite continuing tension and occasional acts that serve as reminders that conflict has not disappeared entirely from the peninsula, the North no longer seems dedicated to the eradication of the government in Seoul (Snyder 1995, 702). Pyongyang may not be on the road to democracy, but circumstantial evidence suggests that the government appears to recognize the importance in international politics of values like the rule of law and the peaceful resolution of disputes. Further, the

incipient emergence of new core ideas about preferred end-states of existence and the behavior instrumental to attain them could reinforce the North's adoption of different priorities, such as political normalization and economic development, that are inconsistent with an unbridled nuclear weapons program.

C. Institutional-setting

1. Did the nuclear nonproliferation regime influence the national decision to be non-nuclear?

As this case study makes clear, states that oppose the horizontal spread of nuclear weapons applied pressure on Pyongyang to fulfill its NPT obligations. Nonetheless, North Korea flouted its responsibilities and the international community seemed unable to enforce compliance with the nonproliferation regime. However, to the extent that satisfying its treaty obligations was essential for Pyongyang to attain certain goals, the regime had an indirect effect on the North (Reiss 1995b, 14). That is, if economic assistance and political normalization were to be forthcoming, then North Korean policymakers had to implement safeguards and generally comply with other aspects of the nonproliferation regime. North Korea's decision to conform to the regime seems to owe more to the search for certain benefits than to a belief in the rectitude of nuclear nonproliferation per se.

D. Other Factors

1. Did any factor or factors in addition to those enumerated in the questions listed above influence the national decision to be non-nuclear?

At least two additional factors seem to have affected North Korea's decision to restrain its nuclear ambitions. First, leaders in Beijing appeared to exert an influence on

policymakers in Pyongyang. In particular, the Chinese seemed to have urged the North Koreans to adopt political and economic paths similar to those being pursued by the PRC (Lehman 1993, 260). Of course, the benefits of such a strategy would be contingent on the North's nuclear restraint. Second, Kim Il Sung also seemed to have calculated that the nuclear program could be a part of the bargain to guarantee a peaceful transition for his son, Kim Jong Il (Chanda 1994c, 21). That is, North Korea's opening to the West would include recognition of the regime, which would make it more difficult for other countries to interfere with the transfer of power following the elder Kim's death (Chanda 1994c, 21).

CHAPTER IV

CASE STUDIES: SOUTH AFRICA, BELARUS, KAZAKHSTAN, AND UKRAINE

In the last chapter, three countries were examined that abandoned research programs with nuclear weapons potential. In this chapter, four states that have relinquished nuclear arsenals are studied to identify reasons for national decisions to return from the nuclear brink. The same methodological format that was applied in the preceding chapter is used in this chapter, although minor modifications are made in the case studies of Belarus, Kazakhstan, and Ukraine. This is necessary because none of these countries embarked on a program to develop nuclear weapons. Rather, the nuclear arsenals and issues surrounding nuclear weapons in these states were a consequence of the dissolution of the Soviet Union. Still, for a thorough analysis of why states decide to relinquish nuclear weapons the former Soviet republics were included in this study for completeness.

Approaching the Brink: South Africa

Genesis and Motivations

The South African nuclear program began a half-century ago and can be divided into two phases. The first phase commenced in the late 1940s with the exploitation of the country's vast uranium deposits (Jaster 1984, 826). Following the Second World War, South African uranium was sold to the Combined Development Agency, a purchasing company created by the United States and Great Britain to acquire the ore to produce the

fissile material necessary for both countries' burgeoning nuclear arsenals (de Villiers, Jardine, and Reiss 1993, 99). The second phase began in the late 1950s and focused more on the development of a technological infrastructure rather than just uranium ore extraction (Jaster 1984, 827). In 1957, a U.S.-South African agreement was signed for nuclear cooperation under Atoms for Peace. Under this program the United States supplied a research reactor fueled with highly-enriched uranium and South African scientists and technicians were trained at American nuclear facilities (Jaster 1984, 827). Also, in 1957, South Africa introduced a nuclear research and development program at Witwatersrand University and became a charter member of the IAEA (Jaster 1984, 827).

The first public hint of an interest in nuclear weapons appeared in 1965. Andries Visser, a member of the South African Atomic Energy Board (AEB), stated that nuclear weapons should be developed to "prevent aggression from loud-mouthed Afro-Asiatic states" and that funds for such an effort were "no problem" (Spector 1990, 270). Later in the same year, speaking at the inauguration of SAFARI I, the American-supplied research reactor, Prime Minister H.F. Verwoerd stated that South Africa would do all in its power to ensure the reactor's uses for peaceful purposes (Barrie 1985, 155). However, he added that South Africa also had a "duty" to "consider" the military application of nuclear material (Betts 1979, 96). Verwoerd's comment about "nuclear material" was an apparent reference to the plutonium that could be produced by nuclear reactors.

From a South African perspective, the 1974 Portuguese revolution was a seminal event in the development of relations between states in sub-Saharan Africa and a watershed in the nuclear program (Bustin 1975, 210; Howlett and Simpson 1993, 155). The end of colonial rule not only removed two key states with white governments

(Angola and Mozambique) from Pretoria's *cordon sanitaire*, but also raised serious questions about the viability of the regime in Rhodesia and the status of Namibia (Bustin 1975, 210).¹ Following the Portuguese revolution, the Marxist governments in Angola and Mozambique posed security challenges for Pretoria. Mozambique became a haven for guerrillas operating to undermine Rhodesia's white-minority government, while Angola was a staging area for an armed insurgency against South Africa (Copley 1994, 802).

In order to counteract this activity, Pretoria supported the National Union for the Total Independence of Angola (UNITA), one of three major factions that emerged in Angola (Copley 1994, 1058). In October 1975, South African forces intervened to assist UNITA, now allied with the National Front for the Liberation of Angola (FNLA), against the ruling faction in Luanda, the Popular Movement for the Liberation of Angola (MPLA) (Copley 1994, 32). Following the Soviet and Cuban intervention in late 1975 and early 1976 to bolster the MPLA, the UNITA-FNLA alliance failed to achieve any further success (Copley 1994, 32).² Subsequently, when the U.S. Senate barred involvement with any group in Angola without prior congressional approval, Pretoria perceived itself as not only threatened militarily, but also isolated politically (Howlett and Simpson 1993, 156).

During the next two years, the South African government was censured in various ways by the international community for its policies. First, the United States suspended fuel shipments for the SAFARI I reactor (Spector 1990, 271). Later, the UN sanctioned a mandatory international arms embargo against South Africa (Spector 1990, 271). Additionally, the IAEA expelled Pretoria from its Board of Governors, an action that

effectively foreclosed South African access to external sources of nuclear assistance (Donnelly and Davis 1991, 5). Also, the United States, Great Britain, France, Canada, and West Germany formed a group to pressure South Africa to withdraw from Namibia (Reiss 1995a, 9). These actions, as well as other measures directed against Pretoria, were described by Defense Minister Magnus Malan as a "total onslaught" of threats to South Africa's security (Fischer 1994, 214).

The most serious challenge was posed by the foreign military presence in neighboring countries. Decision makers in Pretoria did not fear an imminent Soviet attack, but they believed that a confrontation would occur eventually as a result of a Soviet strategy that Foreign Minister R.F. Botha described as "first Namibia, then Botswana, Lesotho, and Swaziland, followed by an attack on South Africa" (Jaster 1984, 836). Botha added that the South African "government [could not] ignore this reality" (Jaster 1984, 836). Accordingly, Pretoria adopted a "total national strategy" to coordinate security planning that included tripling the defense budget and doubling the armed forces by the end of the 1970s (Howlett and Simpson 1993, 156; Reiss 1995a, 9). Following deliberations by South Africa's senior government officials and a study directed by President P.W. Botha, a committee recommended in 1979 that Pretoria construct a small number of nuclear weapons (Reiss 1995a, 9).

Given the outlook in Pretoria regarding the country's security situation several possible motivations for a nuclear weapons program are identifiable. First, nuclear weapons could be used to defend against a massive conventional attack marshaled by black African governments. Nuclear weapons would be suitable for this purpose, but the probability of an overwhelming conventional attack was highly unlikely because these

countries lacked adequate airpower and airlift capabilities, did not possess military bases within reach of important targets in South Africa, and they faced political problems themselves that made a coordinated assault against Pretoria problematic (Betts 1979, 100). Even if these obstacles could have been surmounted, at the time "South Africa's ability to repulse [an attack] through conventional means [was] regarded as a virtual certainty" (Bustin 1975, 221-22). Against any plausible conventional attack from neighboring states nuclear weapons would be quite simply added insurance.

Deterrence of a Soviet attack against South Africa was another possible motivation for the nuclear weapons program. A central element in Pretoria's security policy was a belief that communism was a fundamental threat to South African independence (Howlett and Simpson 1993, 154). Admiral Bierman, Commandant-General of the South African Defense Force (SADF), observed that "it is a prerequisite for the successful defence of the Southern hemisphere that the deterrent strategy based on nuclear terror and the fear of escalation should also be applicable in the region" (Howlett and Simpson 1993, 155). Although it is generally acknowledged that Soviet advisors participated in military engagements involving forces against the SADF, it was improbable that Moscow would have contemplated the direct use of a large Soviet force against South Africa (Fischer 1994, 215). Since the Cuban Missile Crisis, with the exception of interventions in East Europe and Afghanistan, the Soviets exhibited a noticeable reluctance to introduce substantial forces into other regions. Thus the acquisition of nuclear weapons by Pretoria to deter a large-scale Soviet intervention would have constituted planning for an improbable, albeit not impossible, contingency.

Moreover, the use by South Africa of nuclear weapons against Soviet forces would probably have provoked an overwhelming military response from Moscow.

Another and perhaps more plausible security motivation involved a complex strategy of "nuclear blackmail." In other words, a strategy that entailed "a judicious mix of bomb-rattling and calculated orneriness" (Bustin 1975, 224). Remarks by South African officials suggested that Pretoria had adopted a three-part strategy to use nuclear weapons to enhance the country's security without necessarily using the devices against a foe's forces or population. In the first part of the strategy, Pretoria would neither confirm nor deny the existence of nuclear weapons (Albright 1994c, 38). If South Africa's security situation deteriorated seriously, the second part of the strategy would be implemented. Policymakers in Pretoria would confidentially notify the major powers, particularly the United States, about the existence of the nuclear arsenal in the hope that these states would intercede to mitigate the threat to South Africa (Albright 1994c, 38). If this measure either failed to elicit external support or to neutralize the threat, then South Africa could exercise one of several options. Pretoria could disclose its nuclear capability by announcing the existence of the nuclear arsenal, by detonating a device underground, or by demonstrating its delivery capability by dropping a nuclear weapon from a bomber over the ocean (Albright 1994c, 38; Smith 1993c, A26). Ultimately, however, Pretoria did seem prepared to use its nuclear weapons against an aggressor as a last resort to preserve the country's survival.

Against this national security backdrop of calculated ambiguity, a bureaucratic motivation also seemed to impel the South African nuclear program. Robert Jaster (1984, 837) has pointed out that although the concern of South Africa's political leaders

for the country's security was "quite genuine" the motivation of its military leaders was "clearly self-serving." Developments around South Africa's borders and internationally enabled reactionaries in the SADF to exploit fears for the sake of a "nuclear laager" that were sufficient to convince all but the most ardent skeptics that nuclear weapons were necessary for national security (Fischer 1994, 214).³ The decision by political leaders to build up the armed forces and to defer to military judgment were predictable responses to "the hot button of 'total onslaught'" (Grundy 1986, 107). According to one scholar, for South Africa's military leaders:

it was easy to sketch a scenario in which massed black armies, backed by fifty thousand Cuban troops and led by Soviet and East German officers, would converge on the white citadel from the North while the Soviet navy cruised off the shores of the Cape and Natal, and within the ramparts, an increasingly embittered black proletariat would rise up and revolt. (Fischer 1994, 214)

In short, a military buildup that included an ambitious nuclear weapons development program was seen by the military establishment as the only appropriate response to the "total onslaught" against South Africa.

Technical Infrastructure

South Africa has large reserves of uranium ore, an active uranium processing capability, and a long-standing interest in the trade of nuclear materials and technology (Spector 1990, 287; Donnelly and Davis 1991, 2). In addition to the U.S.-supplied reactor and a second indigenously designed and built research reactor (SAFARI II), South Africa operates two French-supplied power reactors at Koeberg (Spector 1990, 287). Although South Africa explored the possibility of extracting plutonium from spent reactor fuel, the program was abandoned due to cost considerations (Albright 1994c, 40). Instead, Pretoria opted to develop uranium enrichment (Albright 1994c, 40). By the late

1960s, the progress made in this area influenced a government decision to build a pilot-scale uranium enrichment plant outside Pretoria (de Villiers et al. 1993, 99).

In July of 1970, Prime Minister John Vorster informed the parliament that South African scientists had developed a novel "high-performance stationary-walled centrifuge" for uranium enrichment (Betts 1979, 95).⁴ During his announcement, Vorster stated that the:

South African process, which is unique in its concept, is presently developed to the stage where it is estimated that under South African conditions, a large-scale plant can be competitive with existing plants in the West. What is more important is that the process still holds appreciable possibilities for further development, and research and development to achieve this are continuing. (Kapur 1979, 237)

Clearly, at the outset, this aspect of the South African nuclear program was intended for the eventual commercial production of reactor fuel (Fischer 1994, 207). A.J.A. Roux, President of the AEB, estimated in the late 1970s that annual sales of enriched uranium reactor fuel produced in South Africa for global markets could earn annual revenues of \$300 million (Betts 1979, 95). Toward the end, the South African Uranium Enrichment Corporation approached French and West German companies (Fischer 1994, 207). Due to South African reluctance to reveal details about its uranium enrichment process and foreign hesitation to invest in an uncertain enterprise negotiations failed to produce any progress (Fischer 1994, 207-08).⁵ Nevertheless, in 1971 construction began on a pilot-scale facility, which commenced partial operation in 1974 and produced enriched uranium four years later (Albright 1994c, 40; Fischer 1994, 208; Reiss 1995a, 8).⁶

In 1971, the AEB was authorized by the Minister of Mines to conduct a preliminary inquiry regarding nuclear explosives for peaceful purposes (Albright 1994c, 41; de Villiers et al. 1993, 99). This work was limited to theoretical calculations related

to the techniques employed in nuclear explosive devices (de Villiers et al. 1993, 99). A three-person engineering team began working in a facility at Pelindaba, while a second group was established in the propulsion laboratory at the Somchem plant in Cape Province (Albright 1994c, 41). This group studied the mechanical and pyrotechnic subsystems involved with the so-called gun-barrel technique used to detonate a nuclear explosive.⁷ The construction and validation of a non-nuclear scale model in May of 1974 convinced Vorster to authorize a limited nuclear explosives program and the construction of an underground test site (de Villiers et al. 1993, 99; Albright 1994c, 41).

Over the next three years, South Africa designed computer programs, conducted experiments on materials' properties and propellants for a gun-barrel device, and built a critical test facility at Pelindaba (Albright 1994c, 41).⁸ Also, in 1976, the Somchem group constructed and tested the first full-scale model of a non-nuclear gun-barrel device (Albright 1994c, 41). In mid-1977, the first nuclear device without a fissile core was prepared for a "cold test" at an underground site in the Kalahari Desert (Albright 1993b, 8-9).⁹ However, the test never occurred because of the international reaction that followed discovery of the site.

In August 1977, a Soviet reconnaissance satellite detected the Kalahari test site (Spector 1990, 272). A subsequent overflight by a U.S. satellite observed "a cluster of sheds and building around a prominent tower" that most American experts were "99 percent certain" would be used in a nuclear explosive test (Jaster 1984, 831). The United States, Soviet Union, France, Great Britain, and West Germany issued protests about South Africa's activities at the site (Betts 1979, 105). South African officials denied the allegation, and Prime Minister Vorster assured President Carter in a letter that "South

Africa did not have, nor did it intend to develop, a nuclear explosive device for any purpose, peaceful or otherwise...and there would not be any nuclear testing of any kind in South Africa" (Betts 1979, 106). Pretoria subsequently closed and abandoned the site (Reiss 1995a, 10).¹⁰

In 1979, an Action Committee appointed by President P.W. Botha recommended that the nuclear explosives program be transferred from the AEB to Armscor, the South African state-owned arms manufacturer (Albright 1994c, 43; de Villiers et al. 1993, 100).¹¹ Armscor built the Kentron Circle facility west of Pretoria to manufacture "deliverable gun-type devices" that were "designed to rigorous specifications in order to avoid the need for a full-scale nuclear test" (Albright 1994c, 43; Albright 1993b, 8). The nuclear strategy discussed above necessitated devices that could be dropped by the SADF's bombers as part of a nuclear demonstration or delivered against an actual target, if such eventualities ever arose. However, in light of the Kalahari revelation, such devices also needed to be highly reliable in order to preclude the requirement for nuclear testing.

On September 22, 1979, further evidence was detected to suggest that South Africa was pursuing a nuclear explosives program. Optical sensors on a U.S. Vela satellite over the South Atlantic Ocean observed a double pulse light signature that is characteristic of nuclear detonations (Adams 1984, 188). A scientific panel appointed by the U.S. Office of Science and Technology Policy to study the incident concluded that "the September 22 signal was probably not a nuclear explosion," but the result of a natural phenomenon (Albright and Zamora 1991, 29). Other data collected at the time of the Vela observation suggested a different, albeit not incontrovertible, conclusion.

Scientists at the Arecibo radio observatory scanning an area of space where the satellite observed the light signature detected an ionospheric ripple that follows a nuclear explosion in the atmosphere (Adams 1984, 191). However, the presence of a severe electrical storm east of the suspected detonation also could have caused the ripple (Adams 1984, 192). A U.S. Naval Research Laboratory (NRL) report released at the time contended that on the basis of a hydracoustic signal detected at the correct time and direction from the Vela sighting that a nuclear detonation had occurred (Adams 1984, 193-94). The Carter administration refuted the conclusions of the Arecibo and NRL scientists. To date, the controversy surrounding the light signal has not been resolved (Albright and Gay 1997, 15).¹²

In 1980, South Africa manufactured its first fully-operational nuclear weapon (Albright 1993a, 3). Over the next ten years, five more devices would be built. Each weapon employed the gun-barrel design and contained between 50 to 55 kilograms (110 to 121 pounds) of highly-enriched uranium, enough fissile material to produce an explosive yield of about 10 to 18 kilotons (Albright 1993a, 3; Albright 1993c, 6). The weapons were approximately 65 centimeters (26 inches) in diameter, about 1.8 meters (6 feet) in length, and weighed nearly 900 kilograms (2,000 pounds) (Albright 1993a, 3). The weapons were designed to be delivered by a modified Buccaneer bomber (Albright 1994c, 44).

Throughout the weapons development program, South Africa applied stringent measures to ensure the safety and security of the devices (Albright 1994c, 43-44). The weapons were stored separately in vaults and were partially disassembled during storage to minimize accidental detonation or unauthorized use (Albright 1994c, 44). Opening the

vaults and assembling the devices required a total of three codes entrusted only to the directors of Armscor and the Atomic Energy Corporation (AEC), the successor to the AEB, and the chief of the SADF (Reiss 1995a, 13). Arming each device required a fourth code known only to the president (Reiss 1995a, 13).

In the late 1980s, construction began on new facilities near Kentron Circle that were intended to be used for development work on replacements for the existing weapons when they reached the end of their operational service in 2000 (Albright 1994c, 45; Albright 1993c, 5). Although President F.W. de Klerk later denied that South Africa intended to build more powerful thermonuclear weapons, the new facilities could have been used to build advanced gun-barrel type weapons or perhaps more efficient implosion devices (Albright 1994c, 45; Wolfsthal 1993, 23). The new facilities were not completed before the nuclear weapons program was cancelled.

Position on the Nonproliferation Regime

South Africa played a major role in the creation of the IAEA in 1957 and in the development of its safeguards system (Moore 1987, 105). During the late 1950s and the 1960s, Pretoria was widely regarded by the nuclear nonproliferation community to be a leading member of the international agency (Moore 1987, 105). Indeed, George Quester (1973, 200) pointed out that "South African participation in the IAEA has all along been serious, responsible, and expert; the nation is quite important not only because of its uranium deposits, but also because of the advanced status of its nuclear industry." Given its activities in the IAEA and national export policies that were aimed at forestalling horizontal nuclear proliferation, the position that Pretoria took regarding the NPT surprised some observers.

During discussions at the UN in the late 1960s on the draft NPT, South Africa adopted a stance that opposed the further spread of nuclear weapons, but resisted adherence to the treaty intended to accomplish that goal. The South African delegate at the UN noted that his country had decided that as a major supplier of uranium that it would "do absolutely nothing...which might conceivably contribute to an addition to the ranks of the nuclear-weapon States" (United Nations 1968, 11). The delegate added that "South Africa fully supports in principle the objective of preventing the spread of nuclear weapons, and we would be ready at any time to play our part in an international effort to produce an effective and equitable treaty that meets this objective" (United Nations 1968, 11). However, according to this delegate, Pretoria did not believe that the draft NPT met that objective (United Nations 1968, 11).

South Africa raised three principal objections to the NPT. First, the treaty did not "take into account the legitimate interests of those non-nuclear countries which have a major economic interest in the development of their own technology and nuclear resources" (United Nations 1968, 11). No elaboration was provided on this point, but one could conclude that South Africa, like other states that opposed the NPT, resisted legal restrictions on nuclear activities that they deemed to be in their legitimate national interests to pursue. Second, Pretoria was not convinced that the NPT contained "sufficiently positive and effective provisions concerning the reduction and eventual elimination by the nuclear-weapon States of their existing stockpiles of nuclear weapons" (United Nations 1968, 11). Although the NPT would obligate the nuclear powers to undertake negotiations to end the nuclear arms race, South Africa did not believe the NPT introduced any new measures that would make future negotiations any more

successful than past arms control efforts (United Nations 1968, 11). Third, since the NPT did not place any restriction on the use of nuclear weapons, Pretoria believed that the treaty did not establish an "acceptable balance of mutual responsibilities and obligations of the nuclear and non-nuclear Powers" (United Nations 1968, 11). This objection was an apparent reference to the security assurances that other countries sought as well.¹³

Pretoria's decision not to sign the NPT evoked little international attention until the 1970s when several developments heightened concern about South Africa's nuclear ambitions (Barrie 1985, 155). The advanced state of South Africa's nuclear capabilities, continuing opposition to the nonproliferation treaty, and discovery of the suspected test site in the Kalahari Desert convinced many in the nonproliferation community that South Africa had embarked on a nuclear weapons program. Efforts by the Carter administration to induce Pretoria to accede to the NPT stalled in 1978 when South Africa refused to permit IAEA inspection of the pilot-scale enrichment facility (Jaster 1984, 845). The official reason given by Pretoria was its fear that the agency could not guarantee that details of the enrichment process would not be vulnerable to industrial espionage (Jaster 1984, 845). In response the United States cancelled a suspended contract to supply fuel for the SAFARI I reactor (Jaster 1984, 845). The following year, the General Conference of the IAEA adopted a resolution that rejected the credentials of the South African delegate (Moore 1987, 106).¹⁴

In 1981, South Africa was removed from the IAEA's Committee on Assurances of Supply, and the following year, in response to a UN General Assembly resolution, the IAEA prohibited Pretoria from receiving any further technical assistance because South Africa continued to resist full-scope safeguards on its nuclear facilities (Moore 1987,

106-07).¹⁵ In 1984, Pretoria attempted to deflate critics of its nuclear program by suggesting that it would adopt IAEA safeguards at a "semi-commercial scale" uranium enrichment facility that it was constructing (Spector 1990, 276). Discussions continued for nearly two years, but failed to produce an agreement when South Africa insisted on certain provisions that were clearly contrary to IAEA safeguard practices (Spector 1990, 276). The impasse was expected to cause several African states to recommend the expulsion of South Africa from the IAEA during the General Conference in 1987 (Spector 1990, 276). As the conference began, President P.W. Botha stated that Pretoria was prepared to begin discussions on the "possibility" of signing the NPT (Donnelly and Davis 1991, 3). Botha's statement caused the Soviet Union, which had supported the African states, to change its position on South African membership in the IAEA (Spector 1990, 276). Thus the Board of Governors voted to defer the issue until a later date (Spector 1990, 276).

In 1989, South African officials indicated that they were ready to discuss the adoption of NPT provisions on their nuclear activities (Donnelly and Davis 1991, 3). At the IAEA General Conference in the same year, prospects seemed promising that Pretoria would accede to the NPT (Spector 1990, 280). In December, South African Foreign Minister Roelof Botha met with American, Soviet, and British representatives to discuss his country's accession to the NPT (Spector 1990, 280). Over the next few months gradual progress was made toward this end. In September 1990, Foreign Minister Botha announced that Pretoria was "prepared to accede to the [Non-Proliferation] Treaty in the context of an equal commitment by other states in the southern African region" (Albright and Zamora 1991, 27).

Although no nuclear threat to South Africa existed in the area, Namibia, Angola, Tanzania, Zambia, and Zimbabwe were not yet signatories of the NPT, which gave Pretoria a reason not to sign the treaty (Albright and Zamora 1991, 27). At first glance, South Africa's position seemed to be nothing more than a delaying tactic; however, internal politics influenced Pretoria's moves. The de Klerk administration was under pressure from conservative elements that wanted more than reacceptance into the international community for acceding to the NPT (Albright and Zamora 1991, 27). Lifting the international sanctions that had been imposed on the country seemed to be the *quid pro quo* that some South Africans sought in exchange for adoption of the treaty (Albright and Zamora 1991, 27).

Finally, in June 1991 Pretoria announced that it would sign the NPT, which it did on July 8 (Donnelly and Davis 1991, 4). Two days later, by executive order, the Bush administration lifted sanctions imposed on South Africa under the Comprehensive Anti-Apartheid Act of 1986 (Donnelly and Davis 1991, 6). In September, Pretoria concluded a full-scope safeguards agreement with the IAEA (Donnelly and Davis 1991, 4).¹⁶ The following month the South African government provided to the IAEA an inventory of all nuclear facilities and materials in the country (Albright 1993a, 4). Subsequent inspections by the agency revealed no inconsistencies between South Africa's declarations and agency findings (Wolfsthal 1992e, 36).¹⁷

Reversing Course: South Africa

Unlike the actions taken by Argentina, Brazil, and North Korea to reverse the direction of their nuclear programs, South Africa's about-face was less protracted and much less complicated. Less than a year transpired between de Klerk's election as

president and his selection of an option to dismantle the country's nuclear weapons. Moreover, once the decision was made to become a non-nuclear weapons state, the South African government moved decisively to destroy its arsenal. The fact that the decision was entirely unilateral and involved no bilateral or multilateral negotiations facilitated the de Klerk administration's activities. For these reasons, the following discussion of Pretoria's decision to reverse the course of its nuclear program is brief.

On March 24, 1993, President de Klerk announced to a joint session of parliament that South Africa had developed and later dismantled six nuclear weapons (Wolfsthal 1993a, 23). De Klerk stated that the fissile cores from the weapons had been melted and recast into shapes not suitable for nuclear explosives before South Africa signed the NPT (Albright 1993a, 3). During his speech de Klerk emphasized that "at no time did South Africa acquire nuclear weapons technology or materials from another country, nor has it provided any to any other country, or cooperated with another country in this regard" (Keller 1993, A12).¹⁸ He also stated that Pretoria had "never conducted a clandestine nuclear test" (Wolfsthal 1993a, 23).

Pretoria's decision to restrain its nuclear ambitions began nearly four years earlier. Soon after his election as president in September 1989 de Klerk directed a committee composed of senior officials from the AEC, Armscor, and the military to study the implications of eliminating South Africa's nuclear weapons and acceding to the NPT as a non-nuclear weapons state (Reiss 1995a, 17). The committee reported its recommendation in November that the weapons should be dismantled (Reiss 1995a, 17). By February 1990, the pilot-scale uranium enrichment plant was closed and a study was underway to ascertain the optimum methods to dismantle the weapons (Reiss 1995a, 17;

Seegers 1996, 207; Spector 1990, 269). The following July the study was completed, and it outlined two options (Reiss 1995a, 18).

Under the first option, one-half of every weapon would be destroyed followed by the destruction of the second half (Reiss 1995a, 18). This would be the most expeditious method to eliminate the nuclear arsenal. The second option entailed dismantling one weapon at a time, until all devices had been eliminated (Reiss 1995a, 18). De Klerk chose the second option in order "to give people more time to get used to the idea" of destroying the country's nuclear weapons (Smith 1993c, A26). The dismantling was a joint Armscor-AEC responsibility, subject to oversight by Professor Wynand L. Mouton, a trusted de Klerk advisor who was tasked to ensure that none of the nuclear material was diverted by opponents of de Klerk's decision (Albright 1993a, 4; Smith 1993c, A26).

Following the dismantling the nuclear material from the weapons was transferred from Armscor's custody to the AEC and "all technical documents, drawings, design information, computer software, and [other] data" were destroyed to ensure that the nuclear weapons program could not be reconstituted (Fischer 1994, 216-17; Reiss 1995a, 19). By July 1991, all non-nuclear components from the devices had been crushed (Smith 1993c, A26).¹⁹ Within two months of de Klerk's 1993 announcement, the South African Parliament adopted nonproliferation legislation that prohibited any citizen from participating in any program aimed at creating nuclear weapons (de Villiers et al. 1993, 108). As a result of the measures taken by Pretoria, President Clinton observed that there was "strong and compelling evidence that South Africa [was] now firmly committed to stopping the spread of weapons of mass destruction and to conducting its nuclear program for peaceful purposes only" (U.S. President 1995b, 1745). As a consequence of

Pretoria's actions, the United States and South Africa signed an agreement in September 1995 that permitted the export of American nuclear technology, materials, and equipment, including reactors, to South Africa for nuclear research and power production (U.S. President 1995b, 1746).

Returning from the Brink: South Africa

A. Security Environment

1. Did the security environment change so that national leaders perceived less threat?

During his March 24, 1993 speech, de Klerk noted that Pretoria had been concerned about "a Soviet expansionist threat to southern Africa" and about developments in neighboring countries that could have portended encirclement by hostile governments (de Villiers et al. 1993, 101). De Klerk's statement about South Africa's "relative isolation and the fact that it could not rely on outside assistance should it be attacked" seemed to identify the rationale for the nuclear arsenal (de Villiers et al. 1993, 101). Given the belief among senior policymakers that they could not depend on external aid to thwart military threats, South Africa opted to develop nuclear weapons to counter a threat that its leaders did not believe they could meet through alternative means.

Following political settlements to resolve issues involving Angola and Namibia and the withdrawal of the foreign military presence from the region the rationale for the nuclear weapons dissipated (Reiss 1995a, 21). Further, the decline and collapse of the Soviet Union obviated the communist threat that many South African leaders had feared.

Commenting on the broader security environment, South African Foreign Minister Nzo has noted more recently that Pretoria decided "to destroy its nuclear

weapons and to become a State Party to the NPT because we saw our security being guaranteed by its provisions" (Collina 1995, 31). The basis of Nzo's comment seemed to be a recognition that a state's security interests can be attained through means other than the possession of nuclear weapons. Indeed, at the 1995 NPT Review and Extension Conference, South Africa proposed a set of principles that its representatives argued should guide international nuclear nonproliferation and disarmament (Collina 1995, 31). Although the regional environment did improve for South Africa, Pretoria's decision to relinquish its nuclear arsenal and to accede to the NPT was a positive demonstration that a nuclear-capable state need not always equate its national security with the possession of nuclear weapons (Sanders 1991, 9).

2. Did additional factors associated with the security environment influence national leaders that their country should be non-nuclear?

The conventional wisdom among some proponents of nuclear nonproliferation is that the threat or imposition of sanctions will induce states to abjure nuclear weapons. In the case of South Africa, the opposite seemed to be true. In the late 1980s, one observer argued that the "pressures being brought to bear on Pretoria could force it to seek refuge in a nuclear *laager*" (Pabian 1988, 47). Given de Klerk's comments above, the combined effect of external threats, political and military isolation, and outside pressures to abandon the military dimension of its nuclear program seemed to impel Pretoria in a direction wholly unintended by the nonproliferation community. Moreover, according to some South African officials knowledgeable of decision making concerning the nuclear program, outside pressure, particularly from Washington, had no direct affect on Pretoria's decision to eliminate its nuclear arsenal (Reiss 1995a, 32).

B. Domestic Environment

1. Did a change in the attitude among national decision makers regarding military competition with potential adversaries influence a decision to be non-nuclear?

The first indication of a changed attitude in Pretoria regarding relations with its potential adversaries was provided by de Klerk in a speech to parliament in 1990 (Reiss 1995a, 20). Part of de Klerk's strategy to reenter the international community involved abandoning efforts to destabilize governments in neighboring countries (Reiss 1995a, 20). Further, the president not only sought normal relations with the international community, which entailed, at least partially, relinquishing nuclear weapons, but also normal relations with countries in the region (Reiss 1995a, 20). In order to contribute to "peace, stability and progress" in southern Africa, Pretoria had to change its outlook regarding military competition with its neighbors (Reiss 1995a, 20). One step toward modifying its long-standing outlook on neighboring governments involved eliminating nuclear weapons, which at this point served no national interest. The disappearance of the rationale for these weapons created an opportunity for de Klerk to eliminate them.

2. Did specific people or groups who supported or sustained a nuclear weapons program lose prominence or depart from the national decision making arena?

In the early 1960s, Dr. A.J.A. Roux, an influential South African scientist, convinced Prime Minister Vorwoerd that the country should develop the capability to enrich uranium (Reiss 1995a, 29). Another influential scientist, Dr. W.L. Grant, directed the program that created the South African enrichment process (Reiss 1995a, 29). Later, both men appeared to exert influence on Pretoria's decision making regarding the uses of nuclear energy, particularly Roux who allegedly persuaded Prime Minister Vorster to

produce fissile material for nuclear weapons (Reiss 1995a, 29). By the time that de Klerk had decided to eliminate the nuclear arsenal, Roux and Grant had retired from government service. Additionally, others who supported the nuclear weapons program, like P.W. Botha and Magnus Malan, either had departed from government or had lost influence with senior policymakers (Reiss 1995a, 20).

3. Did specific people or groups emerge who opposed nuclear weapons or nuclear research programs and influenced the national decision to be non-nuclear?

It was clear that de Klerk “wanted to dismantle the nuclear arsenal” (Reiss 1995a, 17). The various actions taken by the president soon after his election established that one of his administration’s early objectives was elimination of the weapons. De Klerk appointed Waldo Stumpf, a respected scientist who headed the AEC and was known to oppose the nuclear weapons program, to direct dismantling of the arsenal (Reiss 1995a, 17). Following de Klerk’s decision, other senior officials at the AEC opposed to the nuclear weapons program supported the president’s decision (Reiss 1995a, 20). De Klerk also appointed an independent auditor, Wynand Mouton, to oversee the dismantlement effort (Albright 1993a, 4; Smith 1993c, A26). In short, given the impetus provided by de Klerk, opponents of the nuclear weapons program had an opportunity to become active participants in the destruction of the arsenal.

4. Did socioeconomic factors contribute to a national decision to be non-nuclear?

By the early 1990s, it was clear that not only had the rationale for the nuclear arsenal ceased to exist, but the weapons were an obstacle to South Africa’s participation in international relations. In order to reenter the international political mainstream and to exploit opportunities for further socioeconomic development the obstacle had to be

obviated. Following de Klerk's election, there was a belief among senior policymakers in Pretoria that eliminating the nuclear arsenal would increase South Africa's commercial activity regionally and internationally (Reiss 1995b, 12). Further, nuclear restraint as part of a strategy to change South Africa's image could attract foreign investors and influence lifting restrictions on the importation of advanced technologies that could be used for socioeconomic development (Reiss 1995b, 12).

5. Did certain values upon which the government was based influence a national decision to be a non-nuclear weapons state?

The evidence regarding the influence of values on Pretoria's decision to eliminate its nuclear weapons is sparse; thus, much must be discerned deductively. At the time that de Klerk made his decision to dismantle the arsenal the government was undergoing a transition that most observers realized would end white-minority rule and with it many of the policies that had evoked international censure. Indeed, de Klerk was a key actor in this process. By applying Rokeach's definition of values introduced in the second chapter of this study, one can conclude, at least tentatively, that the values pursued by the de Klerk administration did influence the denuclearization decision. That is, de Klerk's search for an end-state of existence for his country that involved normalized relations with South Africa's neighbors and other countries outside the region suggests that part of the behavior instrumental to attain this goal entailed elimination of the nuclear arsenal. Since de Klerk espoused improved relations with the broader international community and "peace, stability and progress" in southern Africa, a crucial aspect of the behavior necessary to achieve these priorities was destruction of the country's nuclear weapons. Moreover, the decision to accede to the NPT as a non-nuclear weapons state

was a further manifestation of South Africa's commitment to regional and international cooperation and peaceful conflict resolution.

C. Institutional-setting

1. Did the nuclear nonproliferation regime influence the national decision to be non-nuclear?

Considerable external influence was exerted on South Africa to induce its decision makers to comply with the nonproliferation regime, primarily by adhering to the NPT. However, neither this pressure nor the existence of the regime per se seemed to affect South Africa's denuclearization directly. Rather, the decision to destroy its nuclear weapons and to accede the treaty were ways to signal the international community that changes were underway in South Africa and to improve its political and economic relations with other countries (Reiss 1995b, 14). Additionally, without accession to the NPT, South Africa was prevented from acquiring foreign resources to develop further its civil nuclear program. In sum, the nonproliferation regime had only an indirect influence on Pretoria's decision to give up nuclear weapons (Reiss 1995b, 14).

D. Other Factors

1. Did any factor or factors in addition to those enumerated in the questions listed above influence the national decision to be non-nuclear?

It has been suggested that a principal reason for South Africa's denuclearization decision was a concern that nuclear weapons or materials would be controlled by an unstable black-majority government. In 1977, Tanzanian leader Julius Nyerere may have provided the basis for such fear among whites in the region when he opined in anticipation of a black-majority government in Pretoria that they would be the first black

Africans to possess nuclear weapons (Betts 1979, 92). Others were fearful that a black government led by Nelson Mandela would share South Africa's nuclear capabilities with Libya or the Palestine Liberation Organization, with whom Mandela had long-standing ties (Fischer 1994, 218). Shortly after de Klerk's March 1993 announcement to the parliament, a former South African official stated that the decision to dismantle the country's nuclear arsenal was "motivated by concern that the [white-minority government] didn't want any...nuclear material or infrastructure falling into the hands of Nelson Mandela" and the African National Congress (ANC) (Albright and Hibbs 1993, 33). Such fears were probably exaggerated. The ANC was known to be opposed to nuclear weapons, and had led efforts to expose and to cancel Pretoria's nuclear weapons program long before de Klerk's announcement (Albright 1994c, 47).

Approaching the Brink: Belarus, Kazakhstan, and Ukraine

The Post-Soviet Nuclear Inheritance

At the zenith of the Cold War, the Soviet Union possessed nearly 33,000 tactical and strategic nuclear weapons (Cochran, Arkin, Norris, and Sands 1989, 14).²⁰ When the Soviet Union disintegrated substantial numbers of these weapons were located in the newly independent states of Belarus, Kazakhstan, and Ukraine. Equally important, many of the weapons deployed in these three countries were among the former Soviet Union's most advanced and powerful systems.

In addition to over 1,000 tactical nuclear weapons in Belarus there were also 81 modern road-mobile SS-25 intercontinental ballistic missiles (ICBMs) equipped with single nuclear warheads (Cochran et al. 1989, 131-32; Reiss 1995a, 131; U.S. Congress 1994, 36). In Kazakhstan the Soviets had based in silo-launchers 104 SS-18 ICBMs,

each capable of carrying ten high-yield nuclear warheads (Cochran et al. 1989, 127; U.S. Congress 1994, 36). Additionally, there were 370 nuclear-armed, bomber-launched cruise missiles located at bases in Kazakhstan (U.S. Congress 1994, 36).²¹ In Ukraine the Soviets had deployed about 4,000 tactical nuclear weapons, 130 older SS-19 ICBMs carrying six warheads each, 46 modern SS-24 ICBMs with ten warheads each, and 34 bombers along with 564 nuclear bombs and air-launched cruise missiles (Cochran et al. 1989, 129-132; Norris and Arkin 1992, 48; Reiss 1995a, 94; U.S. Congress 1994, 36). In toto, Belarus, Kazakhstan, and Ukraine possessed about 8,800 nuclear weapons of various types and yields.

On December 8, 1991, aware that the Soviet Union had reached its twilight, the leaders of the three Slavic republics announced the creation of the Commonwealth of Independent States (CIS). Near the end of the month a summit was held in Alma Ata during which Kazakhstan, the other central Asian republics, and Moldova, Armenia, and Azerbaijan became CIS members and, importantly, Belarus, Kazakhstan, and Ukraine pledged to participate in the return of all tactical nuclear weapons deployed on their territory to Russia by July 1, 1992 (Reiss 1995a, 93).²² At the same meeting Belarus and Ukraine agreed to accede to the NPT as non-nuclear weapons states, and Belarus also agreed to submit the first Strategic Arms Reduction Treaty (START I) to the Supreme Soviet (parliament) for ratification (Reiss 1995a, 93, 131). Several days later at a second summit in Minsk, Kiev vowed to dismantle all strategic nuclear weapons deployed in Ukraine by the end of 1994; although, Alma Ata refused to agree to adopt the same pledge regarding strategic forces deployed in Kazakhstan (Reiss 1995a, 93, 141).

Despite generally positive signs that central control would be maintained over the vast nuclear arsenal of the former Soviet Union, doubts persisted in the West that the situation still constituted a potential proliferation problem. First, any one of three "nuclear republics" could repudiate its pledges and declare itself to be an independent nuclear power (Potter 1993, 3). If this occurred it could influence the other states to choose the same path and potentially create an impetus for further horizontal nuclear proliferation. Second, given the large number of weapons that would be transported to Russia during an uncertain time and through unstable areas it was feared that criminal groups or terrorists could seize the devices (Miller 1994, 90). Third, there were concerns that an illicit trade would develop in nuclear weapons or fissile material and other components from the weapons (Potter 1993, 3). In light of the economic distress in the former Soviet republics and the emergence of a global nuclear black-market this concern seemed quite genuine. Given these conditions, additional measures were subsequently pursued by the United States and are discussed in the following sections on each country's decision to reverse course and to return from the nuclear brink.

Initial Position on Nuclear Weapons: Belarus

In July 1990, the Belarusian Supreme Soviet adopted a declaration that established, *inter alia*, that the country would be a nuclear-free state (Reiss 1995a, 129). A primary reason for this anti-nuclear sentiment stemmed from the 1986 Chernobyl nuclear reactor accident, which contaminated nearly 40 percent of Belarus with varying levels of radioactivity (Marples 1993a, 47). Another major reason to disdain the nuclear weapons deployed in the country concerned Belarusian sovereignty (Reiss 1995a, 130). As soon as the weapons were removed the soldiers responsible for them would return to

Russia. In short, denuclearization facilitated Belarusian independence. Given its motivations to eliminate nuclear weapons, Belarus would be the most forthcoming of the nuclear inheritor states in fulfilling its arms control and nonproliferation obligations (U.S. Congress 1994, 42).

Reversing Course: Belarus

Russian authorities acted expeditiously to remove the tactical nuclear weapons based in Belarus. In April 1992, only four months after the Alma Ata summit, Belarusian Defense Minister Pavel Koszlovsky confirmed that the entire tactical nuclear arsenal had redeployed to Russia (Lockwood 1992b, 21). Additionally, after a meeting in Lisbon, Portugal in May 1992 between the United States, Russia, Belarus, Kazakhstan, and Ukraine, where the parties signed a protocol to establish legal responsibilities regarding the former Soviet nuclear arsenal, Belarusian officials made preparations to remove the SS-25 ICBMs from their country (Reiss 1995a, 132).²³ Several months after the Lisbon meeting, Supreme Soviet Chairman Stanislau Shushkevich directed technical specialists to develop a schedule to withdraw the ballistic missiles as soon as possible (Lepingwell 1993d, 17).

A plan designed to remove all nuclear weapons from the country by the end of 1994 was approved (Reiss 1995a, 133). On February 4, 1993, the Supreme Soviet ratified both START I and the Lisbon Protocol with virtually no opposition (Lepingwell 1993d, 17). The following July Minsk acceded to the NPT, earning praise from Secretary of State Christopher as "a shining example to states around the region" (Lockwood 1993i,

26). In spite of logistical and funding problems that delayed withdrawal of the SS-25 ICBMs, all of the missiles were removed from Belarus by December 1996 (Zhilin 1996, 5).²⁴

Returning from the Brink: Belarus

A. Security Environment

1. Did the security environment change so that national leaders perceived less threat?

The security environment for Belarus did not so much change that national leaders perceived less external threat as a reason to relinquish nuclear weapons; rather, policymakers perceived more threat to their country by retaining these devices. That is, Belarusian leaders were convinced that the presence of nuclear weapons on their territory would invite nuclear attacks against their country if a war ever erupted in the future in the region (Reiss 1995a, 135). Given the Chernobyl aftermath, which some experts compared to a nuclear war, Belarusian fears about the potential consequences of retaining nuclear weapons were entirely rational. Equally important, in light of untroubled military relations between Belarus and its neighbors no national security rationale existed to possess nuclear weapons.

2. Did additional factors associated with the security environment influence national leaders that their country should be non-nuclear?

In the period preceding the Supreme Soviet's ratification of START I and the Lisbon Protocol there was a presumption among policymakers in Minsk that Belarus would receive certain inducements to denuclearize. Among these incentives, Belarusian leaders anticipated the extension of security assurances, particularly from the West. It

does appear that the expectation of such guarantees influenced the Supreme Soviet's ratification action (Mikheyev February 6, 1993, 2). Further, in a telephone conversation several days after START I and the Lisbon Protocol were ratified, President Clinton reportedly informed Shushkevich that the United States would provide security assurances to Belarus (Sinyakevich February 12, 1993, 1).

B. Domestic Environment

1. Did a change in the attitude among national decision makers regarding military competition with potential adversaries influence a decision to be non-nuclear?

The path to Belarusian independence was both less acrimonious and less adversarial than in some other former Soviet republics and in East Europe (Reiss 1995a, 136). Consequently, Belarusian leaders did not perceive an impending military competition with Russia. More importantly, given Belarus's indefensible borders and fiscal problems fomenting a military competition with any of its neighbors, especially Russia, would have been irrational. In early 1992, the Belarusian defense minister stated the obvious when he opined that military conflict with Russia was inconceivable (Reiss 1995a, 137). Shushkevich echoed the same outlook, adding that irrespective of who ruled Russia in the future, Belarus would endeavor to maintain normal relations with Moscow (Reiss 1995a, 137).

2. Did specific people or groups who supported or sustained a nuclear weapons program lose prominence or depart from the national decision making arena?

In Belarus it seemed that no specific individuals or groups emerged following independence to support maintaining a nuclear weapons capability. Indeed, the public record indicates that no one in a senior policymaking position advocated retaining nuclear

weapons. No Belarusian official ever intimated or threatened to retain the weapons to exert pressure on Moscow for concessions (Reiss 1995a, 138). Nor did Belarusian officials request publicly that Moscow compensate Minsk for the fissile material in the tactical nuclear weapons that had been removed from the country (Reiss 1995a, 138).

3. Did specific people or groups emerge who opposed nuclear weapons or nuclear research programs and influenced the national decision to be non-nuclear?

In addition to the nuclear aversion felt by the general population after the Chernobyl accident, the decision to denuclearize had support from virtually all important political groups in the country, albeit for different reasons. Shushkevich supported relinquishing nuclear weapons as a way to garner foreign economic assistance (Reiss 1995a, 134). Belarusian nationalists envisioned denuclearization as an expeditious way to obviate the Russian military presence. Conservative members of the Supreme Soviet and the government bureaucracy supported withdrawing the nuclear weapons because it accorded with Moscow's foreign policy goals (Reiss 1995a, 134-35).

4. Did socioeconomic factors contribute to a national decision to be non-nuclear?

There were probably at least two dimensions associated with this consideration in Minsk's decision to denuclearize. First, Russia procured nearly 70 percent of Belarus's exports and supplied about 90 percent of its energy (Reiss 1995a, 136). Antagonizing Moscow by refusing to return the nuclear weapons could interfere with Shushkevich's plans to reform the economy and to improve living standards in the country. Second, both the chairman and the Supreme Soviet anticipated some economic assistance from the West, especially the United States, in exchange for relinquishing the nuclear weapons (Mikheyev February 6, 1993, 2). During their conversation following ratification of

START I and the Lisbon Protocol, Clinton reportedly promised economic aid to Shushkevich (Sinyakevich February 12, 1993, 1). Shortly thereafter, the United States proposed to Belarus an aid package under the Soviet Nuclear Threat Reduction Act, the so-called Nunn-Lugar legislation, worth as much as \$65 million ("Fact Sheet: Safe, Secure Dismantlement (SSD) Initiatives with Belarus, Kazakhstan, and Ukraine" May 1993, 11). Although these funds were earmarked for defense conversion and missile site cleanup, they did contribute indirectly to socioeconomic development in Belarus by precluding the diversion of scarce domestic resources for these purposes.

5. Did certain values upon which the government was based influence a national decision to be a non-nuclear weapons state?

The record regarding the influence of values on Minsk's decision to denuclearize is meager, but some conclusions can be deduced tentatively. Shushkevich's plan to reform the economy and the Supreme Soviet's 1990 declaration of Belarus's neutral status suggest a conscious search by government officials for integration into the global mainstream and for non-adversarial relations with other states. The pursuit by senior Belarusian policymakers of an end-state of existence that included these objectives suggests that at least part of the behavior instrumental to attain them included removal of the nuclear arsenal. Belarus confronted no serious security threat, so circumstances afforded Minsk an opportunity to demonstrate its acceptance of international cooperation and peaceful conflict resolution. Thus one could conclude, at least preliminarily, that values had an influence on Belarusian decision makers.

C. Institutional-setting

1. Did the nuclear nonproliferation regime influence the national decision to be non-nuclear?

The decision by Belarus to remove nuclear weapons from its territory seemed to be motivated more by political and economic factors than by the importance that decision makers ascribed to the nonproliferation regime. By ratifying START I and the Lisbon Protocol and acceding to the NPT, Minsk cleared the way to obtain certain goals defined by Belarusian policymakers. As a way to attain political recognition and economic assistance adherence to the nonproliferation regime was a crucial step. As such, however, the regime itself played only an indirect role in Belarus's decision to denuclearize (Reiss 1995b, 14).

D. Other Factors

1. Did any factor or factors in addition to those enumerated in the questions listed above influence the national decision to be non-nuclear?

One additional factor seemed to influence actions to expedite the removal of nuclear weapons from Belarus. Minsk's decision not to attempt to leverage its nuclear arsenal for Russian concessions and not to insist upon financial compensation for the weapons removed from its territory attested to its foreign policy inexperience (Reiss 1995a, 138). Unlike Kazakstani and Ukrainian officials who delayed the withdrawal of some nuclear weapons from their territories until compensatory measures were clear, the Belarusians undertook no such gambit. The Belarusians acted so expeditiously to denuclearize their country that they may have failed to realize the financial compensation that could have been obtained in exchange for the nuclear weapons.²⁵

Initial Position on Nuclear Weapons: Kazakhstan

In 1949, the Soviet government selected a site in Kazakhstan near the city of Semipalatinsk as the location for the research, development, and testing of nuclear weapons (Conway 1994, 166). Over the next four decades, 466 nuclear explosions occurred at the site: 26 aboveground, 90 atmospheric, and 350 underground (Kianitsa 1993, 37). Of the underground detonations approximately one in every three vented radioactive emissions into the atmosphere, and in at least 30 cases the radiation spread beyond the test site into populated areas (Kianitsa 1993, 38). As a consequence of nuclear testing genetic abnormalities are common among the area's inhabitants, infants are born with neurological and physical defects, and leukemia is widespread (Conway 1994, 166). In 1989, when Nursultan Nazarbayev became First Secretary of the Kazakhstan Communist Party he publicly voiced his opposition to the tests (Kianitsa 1993, 38). Two years later as the president of newly independent Kazakhstan, Nazarbayev closed the site and demanded compensation for health problems attributed to the testing (Copley 1994, 614).

In light of the legacy at Semipalatinsk and Nazarbayev's decision, Alma Ata's subsequent pronouncements on nuclear weapons were surprising. Unlike the Belarusians, who acted expeditiously to remove nuclear weapons from their territory, the Kazakstanis indicated that the former Soviet nuclear arsenal might be retained on their soil for the foreseeable future (Reiss 1995a, 139). Initially, Nazarbayev opined that logistical and financial considerations would delay the removal of nuclear weapons from Kazakhstan (Reiss 1995a, 140). Several months later at the Alma Ata summit, the Kazakstanis, along with the Belarusians and the Ukrainians, agreed to return all tactical

nuclear weapons to Russia.²⁶ However, unlike Belarus and Ukraine, Kazakhstan refused to agree that Russia, in consultation with the other “nuclear republics,” would decide how to employ the nuclear weapons possessed by the CIS (Lepingwell 1993d, 5). Kazakhstan also refused to accede to the NPT as a non-nuclear weapons state (Lepingwell 1993d, 5). Later, at the Minsk summit, Kazakhstan refused to eliminate all strategic nuclear weapons located on its territory by the end of 1994 (Reiss 1995a, 141).

Reversing Course: Kazakhstan

Throughout early 1992, the position of Kazakstani officials on strategic nuclear weapons fluctuated between statements that the country would accede to the NPT as a non-nuclear weapons state and assertions that Kazakhstan should be considered a nuclear weapons state because these devices had been tested on their territory (Lepingwell 1993c, 59).²⁷ Moreover, the Kazakstanis offered two reasons to argue for retention of the strategic weapons. First, they cited signs of resurgent Russian imperialism and inferred the need for a nuclear deterrent to dissuade any provocation that might emanate from Moscow (Lepingwell 1993c, 59). Second, the Kazakstanis claimed that without nuclear weapons their country would become a weak, vulnerable state situated between two nuclear-armed powers – Russia and the PRC (Lepingwell 1993c, 59).

The more likely reasons for Almaty’s position were greater attention and financial aid from the United States (Lepingwell 1993c, 60). If these were Nazarbayev’s reasons, they gained some success. Prior to arriving in Washington for a meeting with President Bush before the Lisbon conference in 1992, Nazarbayev announced that Kazakhstan would accede to the NPT as a non-nuclear weapons state (Lepingwell 1993c, 60). During his talks with Bush, Nazarbayev indicated that Almaty was prepared to sign START I

(Morrocco 1992, 23). A partial security assurance was offered to Nazarbayev, who was informed that the United States took seriously its obligation to seek immediate UN Security Council action to provide assistance to any non-nuclear state threatened or attacked by a nuclear-armed country (Lepingwell 1993c, 60).²⁸ Perhaps equally important, Nazarbayev departed Washington for Lisbon with Most-Favored-Nation status for Kazakhstan and a bilateral investment treaty (Morrocco 1992, 23).

Although Kazakhstan ratified START I and the Lisbon Protocol in July 1992, fourteen months later the NPT was still not ratified (Lepingwell 1993c, 60).²⁹ In late September 1993, a U.S. delegation concluded with the Kazakstanis an "umbrella" agreement to establish a legal framework to deliver Nunn-Lugar assistance (Lockwood 1993g, 23; Lockwood 1994b, 10). Also, the United States and Kazakhstan completed several implementing agreements for strategic nuclear delivery system dismantlement, for development of an effective export control system to preclude the spread of nuclear material or technology, and for development of a system for accounting of civilian nuclear material (Lockwood 1993g, 23). In mid-December, Vice President Gore met with Nazarbayev and finalized arrangements for the Kazakstanis to ratify the NPT, which occurred during the Gore visit (Berke 1993, A15). At a meeting with President Clinton two months later, where Nazarbayev presented Kazakhstan's instrument of accession to the NPT, the U.S. president pledged additional funds for nuclear weapons elimination and increased economic aid to Almaty from \$91 million to \$311 million (Clinton and Nazarbayev February 21, 1994, 97; Devroy 1994b, A4).³⁰

A postscript to Kazakhstan's denuclearization was provided in 1994. In a joint U.S., Kazakstani, and Russian operation, an American team quietly and quickly

removed 600 kilograms (1,320 pounds) of weapons-grade uranium from Ulba in eastern Kazakhstan (Morrocco 1994, 27).³¹ The operation was undertaken at the request of Kazakstani officials who sought to have the material withdrawn from their territory because securing it strained their resources (Morrocco 1994, 27). The highly-enriched uranium was taken to the Department of Energy's Y-12 facility at Oak Ridge, Tennessee, where it was converted into reactor fuel (Morrocco 1994, 27). In exchange, Almaty received an unspecified aid package drawn from Nunn-Lugar funds and the State Department's Freedom Support program (Morrocco 1994, 27).

Returning from the Brink: Kazakhstan

A. Security Environment

1. Did the security environment change so that national leaders perceived less threat?

Like Belarus, Kazakhstan's security environment did not so much change that Kazakstani leaders perceived less external threat as a reason to relinquish nuclear weapons, but that they judged more threat to the country if they retained these devices indefinitely. Clearly policymakers in Moscow wanted all nuclear weapons returned to Russia as soon as possible. If Almaty was to avoid antagonizing the Russians and to gain Moscow as an ally against possible future threats, then relinquishing nuclear weapons was a crucial variable in the Kazakstani national security equation (Potter 1992, 158). Further, retaining nuclear weapons, which the Kazakstanis would have been hard-pressed to maintain and to employ, would have only hampered normalizing relations with the West. In short, nuclear weapons would not improve Kazakhstan's security, and under certain scenarios they could have actually harmed those interests.

2. Did additional factors associated with the security environment influence national leaders that their country should be non-nuclear?

Between 1992 and 1994, several events occurred to bolster Almaty's decision to relinquish its nuclear arsenal. First, Kazakhstan and the other CIS states signed a collective security agreement in Tashkent that established that any aggression against a Commonwealth member would be considered an attack against all members (Morrocco 1992, 23). The Kazakstanis saw the accord as an assurance against possible intrusions into their territory. Second, in a letter from the Chinese foreign ministry, Beijing stated that the PRC had renounced all territorial claims against Kazakhstan (Reiss 1995a, 145). This Chinese overture further improved Almaty's security outlook. Third, in October 1993 Chinese President Jiang Zemin extended nuclear no-first-use and nonaggression pledges to Kazakhstan (Reiss 1995a, 148). Finally, during a meeting with President Clinton, Nazarbayev said that security assurances provided by the United States "strengthened our confidence in the future of Kazakhstan as a sovereign state" (Clinton and Nazarbayev February 21, 1994, 98). These guarantees of Kazakhstan's territorial integrity and security assurances from the nuclear powers were major factors in Almaty's decision to denuclearize (Kozlov December 16, 1993, 3).

B. Domestic Environment

1. Did a change in the attitude among national decision makers regarding military competition with potential adversaries influence a decision to be non-nuclear?

In light of its growing political independence during the final years of the Soviet Union and its non-adversarial declaration of state sovereignty there was little basis for Kazakhstan to perceive any military competition with Russia (Copley 1994, 614). More

importantly, given its geographic location and military situation vis-à-vis the PRC, Russia was perhaps Almaty's most likely security guarantor. Thus no change in attitude among Kazakstani policymakers was necessary for them to decide to relinquish the nuclear arsenal.

2. Did specific people or groups who supported or sustained a nuclear weapons program lose prominence or depart from the national decision making arena?

Although Nazarbayev and other Kazakstani officials made statements about retaining the nuclear arsenal, upon subsequent evaluation their position was grounded in a strategy to get as much financial and security assistance as possible for surrendering the weapons rather than an aspiration to become a nuclear power (Copley 1994, 615). Some Kazakstani parliamentarians opposed START I because they believed that it did not satisfy the country's security requirements, but they had little influence with senior policymakers who had already decided to relinquish the nuclear arsenal (Reiss 1995a, 147). Thus no significant political actors existed who supported maintaining the nuclear arsenal over the long-term.

3. Did specific people or groups emerge who opposed nuclear weapons or nuclear research programs and influenced the national decision to be non-nuclear?

The damage done around Semipalatinsk by four decades of nuclear testing created among Kazakstanis a disdain for "all things nuclear." In addition to an active environmental group opposed to nuclear weapons, the Nevada-Semipalatinsk Movement, Nazarbayev's role was crucial in the country's decision to denuclearize (Conway 1994, 166). As the dominant figure in Kazakstani politics, Nazarbayev crafted and executed a strategy that not only divested his country of nuclear weapons, but he did so in a way that

maximized Kazakhstan's economic, political, and security interests (Copley 1994, 615). In short, the national impetus against nuclear weapons generated by the Semipalatinsk legacy provided Nazarbayev with a foundation to achieve broader goals for his country.

4. Did socioeconomic factors contribute to a national decision to be non-nuclear?

Garnering financial assistance for socioeconomic development was one of the principal reasons behind Kazakhstan's decision to denuclearize. In spite of his Communist Party credentials, Nazarbayev became a strong advocate of privatization and free market economics as ways to improve Kazakhstan's economy and living standards (Copley 1994, 615). Nazarbayev recognized that integrating his country into the world economy necessarily entailed accepting treaty obligations related to the nuclear nonproliferation regime (Ustiugov 1993, 36). Indeed, Nazarbayev's strategy reflected a carefully planned and implemented approach to accept nonproliferation commitments that were linked to financial compensation for Kazakhstan.

5. Did certain values upon which the government was based influence a national decision to be a non-nuclear weapons state?

Despite early pronouncements by the central government that Kazakhstan would retain its nuclear weapons, one commentator who followed Kazakstani politics closely was not pessimistic on this point. He observed that Nazarbayev was "strongly oriented toward Kazakhstan's integration into the...civilized international community" (Ustiugov 1993, 36). The values of the Kazakstani government under Nazarbayev did seem to reflect an orientation toward regional and international cooperation, coexistence, and non-violent conflict resolution, values that accorded more with the nonproliferation regime than with retention of a substantial nuclear arsenal. Support for this view

emerged when Nazarbayev and Clinton met in early 1994. At that meeting the United States and Kazakhstan signed a charter on democratic values that included affirmation of the rule of law, both domestically and internationally (Clinton and Nazarbayev February 21, 1994, 97).

C. Institutional-setting

1. Did the nuclear nonproliferation regime influence the national decision to be non-nuclear?

The decision by Kazakhstan to eliminate nuclear weapons from the country seemed to be motivated more by political and economic factors than by the importance that decision makers attached to the nonproliferation regime. By ratifying START I and the Lisbon Protocol and acceding to the NPT, Almaty cleared the way to attain goals defined by Kazakstani leaders. As a way to obtain security assurances and economic aid adherence to the nonproliferation regime was a crucial step. However, the regime per se only indirectly affected Kazakhstan's decision to remove nuclear weapons from its territory (Reiss 1995b, 14).

D. Other Factors

1. Did any factor or factors in addition to those enumerated in the questions listed above influence the national decision to be non-nuclear?

The contamination of the Semipalatinsk area from Soviet nuclear testing had a major influence on Kazakstani denuclearization. This legacy had such a profound affect on the Kazakstanis that even before Nazarbayev closed the site, the country's leaders resisted attempts by the Soviet Union to resume testing, which had ceased earlier as part of a voluntary moratorium. When the Soviet government offered Kazakhstan 5.1 billion

rubles to conduct just two more nuclear tests the Kazakstanis refused because of pressure exerted by the Nevada-Semipalatinsk Movement (Conway 1994, 166).

Initial Position on Nuclear Weapons: Ukraine

Initially it appeared that Ukraine would relinquish the nuclear weapons that it had inherited from the former Soviet Union. In the July 1990 Declaration on State Sovereignty, the Ukrainian parliament established, *inter alia*, that Ukraine would abjure nuclear weapons (Zlenko 1993, 12). In a meeting in September with President Bush, Leonid Kravchuk, Chairman of the Supreme Soviet, stated that Ukraine sought "the status of a nonnuclear power" because Ukrainians were "against the proliferation of nuclear weapons and the emergence of new nuclear powers" (Blinov and Mushaterov September 26, 1991, 2). In a subsequent statement before the UN General Assembly, Kravchuk said that the presence of nuclear weapons in Ukraine was a "transient phenomenon" and that "their elimination, as well as the elimination of components used in their deployment, [was] only a matter of time" (Golts October 5, 1991, 2). Following his visit to the United States, Kravchuk informed French President Mitterand that Ukraine supported the elimination of all nuclear weapons (Kovalenko October 4, 1991, 4). Shortly thereafter, Kravchuk reiterated that "the presence on Ukrainian territory of nuclear weapons of the former USSR [was] temporary," and he indicated that Ukraine would abide by START I and accede to the NPT (Tsikora October 25, 1991, 1). Indeed, Kiev's commitments at the Alma Ata and Minsk summits seemed to confirm this position.

Russia began removing tactical nuclear weapons from Ukraine soon after the Minsk summit, and by late February 1992 a substantial portion of these devices had been

withdrawn (Reiss 1995a, 94). However, in mid-March Kravchuk suspended removal of the tactical nuclear weapons from Ukrainian territory (Lockwood 1992b, 21). Kravchuk stated that the action was taken because Ukraine could not “guarantee that weapons transported to Russia [would] be destroyed” or that they would not fall into “unfriendly hands” (Lockwood 1992a, 19; Yushin March 13, 1992, 2). Additionally, the Rada (parliament) became increasingly restive about plans to denuclearize Ukraine. In early April 1992, after the Rada began to debate the removal of nuclear weapons from Ukraine, opposition emerged to unilateral disarmament (Nahaylo 1993, 32).

Several reasons seemed to account for the position taken by the parliamentarians. First, for many Rada members it seemed imprudent to surrender nuclear weapons to the state that posed the greatest security threat to Ukraine (Nahaylo 1993, 32). Second, it seemed equally injudicious to relinquish the weapons without security assurances from other states, principally the nuclear powers (Nahaylo 1993, 32). Third, several parliamentarians believed that Ukraine would lose the attention of the world community once the nuclear arsenal was removed; therefore, the full implications of denuclearization needed to be understood before the plan progressed further (Macilwain 1993, 599; Portnikov January 11, 1993, 3; Zlenko 1993, 11).

In a resolution on Additional Measures for Ensuring Ukraine’s Acquisition of Nonnuclear Status, the Rada reaffirmed the country’s intention to become a non-nuclear weapons state, but established that it was “expedient not to transfer tactical nuclear [weapons] from the territory of Ukraine until the mechanism for international control of their destruction [had] been worked out and implemented with Ukraine’s participation” (Nahaylo 1993, 33).³² The document instructed relevant Rada commissions to consider

with the assistance of specialists all economic, ecological, and organizational issues associated with nuclear disarmament (Nahaylo 1993, 33). Further, the resolution directed the government to submit for ratification the Alma Ata and Minsk summit agreements (Nahaylo 1993, 33). When it appeared that Kiev's position on denuclearization would harden, the Bush administration sent a high-level delegation to Ukraine to confer with Kravchuk (Nahaylo 1993, 33). On the same day that the delegation was in Kiev, Ukrainian Foreign Minister Anatoly Zlenko announced that Ukraine and Russia had agreed to resume the removal of the tactical nuclear weapons on the basis of an accord that enabled joint monitoring of the process (Mushkaterov April 15, 1992, 4; Lepingwell 1993d, 8; Lockwood 1992b, 21).

During a two week period preceding Kravchuk's May 1992 visit to Washington, the Ukrainian president and foreign minister emphasized the importance of Western economic and technical assistance to dismantle nuclear weapons (Nahaylo 1993, 33). Kravchuk added that removing these weapons from Ukrainian territory was also contingent on security guarantees from the West (Nahaylo 1993, 33). While Kravchuk was in Washington, the director of the Chief Administration of the CIS Joint Armed Forces informed *Izvestia* that the last tactical nuclear weapons in Ukraine had been withdrawn to Russia on May 6 (Litovkin May 6, 1992, 1). Kravchuk initially denied the report, but he later confirmed its accuracy after receiving confirmation from Ukrainian Defense Minister Konstantin Morozov (Lockwood 1992b, 21; Lockwood 1992c, 16). Unknown to Kravchuk and contrary to an earlier assertion by Morozov that "not one warhead [had] left Ukraine" since Kravchuk's suspension directive, Russian authorities had ignored the order and had continued to withdraw the tactical nuclear weapons so that

the entire project was completed in early May, nearly two months ahead of a schedule agreed at the Alma Ata summit (Lockwood 1992b, 21; Reiss 1995a, 96; Tsikora March 24, 1992, 2).

In spite of the embarrassment to Ukraine from Russia's action, Kravchuk's visit to the United States yielded some positive results. Ukraine received Most-Favored-Nation status, pledges of American technical assistance, and a Peace Corps program (Nahaylo 1993, 35). Perhaps more importantly from a nonproliferation viewpoint, Kravchuk confirmed Ukraine's intention to adhere to START I and the NPT as a non-nuclear weapons state (Lockwood 1992c, 16). Although Kravchuk did not receive the American security assurances that Ukraine sought, he told the press after a meeting with Bush that Kiev would continue to seek such guarantees (Nahaylo 1993, 35).

Throughout the debate in Kiev and discussions in the United States concerning Ukrainian ratification of START I and accession to the NPT two key issues impelled Ukraine's position: security assurances and economic assistance (Nahaylo 1993, 38; Zlenko 1993, 11). From the security perspective, two sources of friction existed between Moscow and Kiev. First, most Ukrainians were convinced that Russians were unable or unwilling to view their country as an equal partner in the CIS (Solchanyk 1992, 8). Moscow articulated economic, political, and military policies that suggested that Russia was the "new center" of the Commonwealth (Solchanyk 1992, 8). Second, the historical legacy of Ukrainian-Russian relations, whose defining characteristic was a Russian presumption that Ukraine was indivisible culturally and geographically from Russia, caused many Russians to dismiss Ukraine as an independent, sovereign entity (Solchanyk 1993, 27). In this regard, Ukrainian insecurity was heightened by Russian

military interference in the Caucasus, Moldova, and Tajikistan to destabilize local authorities and by statements of Russian politicians who asserted Moscow's right to intercede in any former republic to protect ethnic Russians dwelling in the newly independent states (Karatnycky 1995, 70; Ra'anan 1995, 20-21). For many Ukrainians, nuclear weapons were a way to counterbalance a possible Russian threat.³³

Insofar as economic assistance was concerned, the presence of nuclear weapons in Ukraine provided Kiev with leverage to compensate for domestic economic constraints. The Ukrainians sought financial aid not only to eliminate the nuclear weapons and to solve certain ecological problems created by the arsenal, such as the hazards posed by the liquid fuel in the SS-19 ICBMs, but also compensation for the fissile material removed from the weapons (Skachko and Savtsov January 11, 1993, 1). In late 1992, newly appointed Prime Minister (and later President) Leonid Kuchma informed the U.S. ambassador to Ukraine that denuclearization was a costly effort, and he hinted that permitting the removal of the tactical nuclear weapons "for free" had been an error and Ukraine could not again "give away" nuclear weapons (Nahaylo 1993, 41). Kuchma opined that Ukraine "removed the tactical nuclear weapons" and the "Russians got a contract to supply the US with nuclear fuel" (Nahaylo 1993, 41).³⁴

The United States made clear to Kiev that if Ukraine relinquished the nuclear arsenal the country could qualify for Nunn-Lugar funds (Keeny 1992, 2). Further, as part of a \$12 billion U.S. contract to purchase "blended down" fissile material from Russian nuclear weapons for use in civilian power reactors, Kiev could receive a portion of these funds as compensation for the strategic nuclear weapons still on Ukrainian territory (Blair 1993, 46; Miller 1994, 112). Following Kuchma's appointment as prime minister,

Ukrainian demands for financial compensation escalated (Reiss 1995a, 104).³⁵ However, over the next few months progress on resolving the Ukrainian nuclear issue was discontinuous, due in no small part to the change of administrations in the United States.³⁶

Reversing Course: Ukraine

In April 1993, after an internal policy review, the Clinton administration decided to emphasize active engagement with Kiev using a strategy designed to persuade Ukrainian policymakers that denuclearization was part of a long-term relationship with Washington that included economic, political, and military dimensions (Reiss 1995a, 107). Heretofore, American policy toward Ukraine focused almost entirely on nuclear disarmament. Most Ukrainians believed that this perspective was myopic and neglected Kiev's wider concerns about regional security and domestic stability (Garnett 1995, 10). After the review, Washington seemed to acknowledge Kiev's concerns because U.S. policy now included several components to influence Ukrainian denuclearization (Garnett 1995, 9).

In early May 1993, Ambassador-at-large Strobe Talbott met with Ukrainian officials to explain the new U.S. policy (Lockwood 1993b, 25). Talbott emphasized U.S. partnership, not pressure, in relations with Ukraine (Lockwood 1993b, 25). Talbott's interlocutor, Deputy Foreign Minister Boris Tarasiuk, responded favorably to the overture by observing that U.S. pressure to ratify START I and to accede to the NPT had "strengthened forces calling for a nuclear Ukraine" and that "the pressure [had] an effect opposite to what the U.S. administration expected" (Lockwood 1993b, 25). Talbott added that in light of its relationship with Russia and Ukraine the United States was

prepared to assist in the resolution of issues between Moscow and Kiev (Syrov May 13, 1993, 3). Further, Talbott noted that if Kiev ratified START I and acceded to the NPT, then relations between the United States and Ukraine would "significantly improve" (Syrov May 13, 1993, 3).

During a trip to Kiev in June 1993 Secretary of Defense Aspin proposed that all ICBMs in Ukraine be dismantled and stored on Ukrainian territory (Lockwood 1993c, 23). Defense Minister Morozov was receptive to the proposal; however, Russian Defense Minister Pavel Grachev opposed the idea (Felgengauer July 9, 1993, 4). The Russians alleged that the proposal was nothing more than an attempt to gain access to sensitive nuclear weapons and missile technology (Felgengauer July 9, 1993, 4). Although Aspin did not provide security assurances to Kiev, he indicated that expanded military contacts and more financial assistance would be the quids pro quo for adherence to the non-proliferation regime (Syrov June 9, 1993, 3).

In mid-July, Ukraine began removing a ten-missile regiment of SS-19 ICBMs from silo launchers at Pervomaysk (Lockwood 1993e, 30). The airframes were transported to Russia for destruction, but the warheads remained in Ukrainian storage sites pending the outcome of a Rada debate on whether Ukraine could verify dismantling of the weapons and how Kiev would be compensated for the fissile material in the warheads (Keeny 1993b, 31; Lockwood 1993e, 30). Defense Minister Morozov indicated that removal of any SS-24 ICBMs would probably not occur before completion of Rada deliberations (Lockwood 1993e, 30). In a step that delinked financial assistance from treaty considerations and linked it to missile elimination, the Clinton administration

released a portion of the Nunn-Lugar funds designated for Ukraine (Lockwood 1993e, 30).

In September 1993, negotiations that had been underway between Ukraine and Russia throughout the summer yielded dividends when Presidents Kravchuk and Yeltsin met at Massandra in the Crimea, and accords were signed that signaled a breakthrough on the denuclearization issue (Lepingwell 1994a, 6). Under one agreement, Kiev would return nuclear weapons to Russia in exchange for fuel for Ukraine's nuclear power reactors (Kononenko and Semena September 4, 1993, 1).³⁷ The day after the summit the Ukrainian foreign ministry indicated that the nuclear weapons agreement was contingent on the prior conclusion of an accord between the United States, Russia, and Ukraine regarding the disposition of the arsenal (Lepingwell 1994a, 7). Several days later, Kravchuk added that the nuclear weapons agreement was also conditional on ratification of START I and that the warhead agreement itself would have to be ratified by the Rada (Lepingwell 1994a, 7). Moscow protested that these positions were nothing less than backpedaling (Lepingwell 1994a, 7).

The situation was exacerbated when *Kievskiye vedomosti* (*Kiev Gazette*) published a copy of The Protocol on the Removal to the Russian Federation of All Nuclear Warheads of Strategic Nuclear Forces in Ukraine (Abarinov and Bogat September 23, 1993, 3). Allegedly, after Prime Minister Kuchma signed the document, a senior aide deleted the word "all" and inserted the words "that fall under the treaty" after "strategic nuclear forces" (Abarinov and Bogat September 23, 1993, 3). The implication of the changes was that Ukraine intended to retain some of the nuclear weapons. Moscow challenged the alterations, but Kiev refused to restore the original text

(Abarinov and Bogat September 23, 1993, 3). The Ukrainian foreign ministry asserted that the "amendment [to the text] was introduced, not after the signing of the document, but while it was being prepared" (Lockwood 1993f, 24). The ministry added that "Russian representatives were present when the amendment was introduced" (Lockwood 1993f, 24). The issue was never resolved, primarily because Kravchuk did not support the agreement and did not submit it to the Rada (Lepingwell 1994a, 8).

In October 1993, during a trip to Kiev, Secretary of State Christopher urged Ukrainian officials to ratify START I (Lepingwell 1994a, 8). Additionally, he indicated that Ukraine's denuclearization would be reciprocated with U.S. financial and technical assistance (Lepingwell 1994a, 8). In furtherance of the nonproliferation goal and to pave the way for Kiev's efforts, the United States and Ukraine signed an "umbrella" agreement to create the legal framework to deliver Nunn-Lugar funds (Lockwood 1994a, 28).³⁸ At the end of the visit Christopher obtained from Kravchuk a commitment that the Rada would consider START I and the NPT the following month (Lepingwell 1994a, 8).

In November, the prospect for changing Ukraine's nuclear posture dimmed when Russia articulated a new military doctrine that abandoned an eleven-year old Soviet nuclear weapons no-first-use policy (Lockwood 1993h, 19). Moscow stipulated, however, that it would not employ nuclear weapons against any state that was a party to the NPT, except in a case where Russia or an ally was attacked by a state allied with, or jointly attacking with, a nuclear-armed country (Lockwood 1993h, 19). Not only was the Russian statement reminiscent of a similar assurance issued by the United States in 1978, but it impressed some observers as intended to compel Ukraine to accede to the NPT (Lockwood 1993h, 19). Despite this hint of Russian pugnacity, on November 18, 1993,

the Rada voted to ratify START I, but attached eleven conditions, all of which had been raised earlier by Ukrainian officials (Kondrashov November 27, 1993, 3).

Among these conditions, seven had to be fulfilled before Kiev would exchange the instrument of START I ratification (Lepingwell 1994a, 9). First, Kiev insisted on guarantees against nuclear and conventional attacks, economic coercion, and infringements on Ukrainian territorial integrity and sovereignty (Lepingwell 1994a, 9). Second, reductions in strategic nuclear missile launchers deployed in Ukraine would be 36 percent of the total force, which indicated an intention to retain the SS-24 ICBMs and to retire the older SS-19s (Lepingwell 1994a, 9).³⁹ Third, Kiev reiterated the requirement for foreign financial aid to undertake denuclearization (Lepingwell 1994a, 9). Fourth, once START I entered-into-force it must not be used by any party to gain advantage in missile technology or nuclear energy (Lepingwell 1994a, 9). Fifth, Ukraine must be permitted to monitor the elimination of all nuclear weapons removed from its territory (Lepingwell 1994a, 9). Sixth, Ukraine must be compensated for fissile material in the nuclear weapons located on its soil and the tactical nuclear weapons removed earlier (Lepingwell 1994a, 9). Finally, the Ukrainian government restated in Point 11 of the ratification resolution that Kiev must be provided with security assurances and financial compensation to denuclearize (Lepingwell 1994a, 9).

Following the Rada's vote, Russian Foreign Minister Andrei Kozyrev declared that "Ukrainian parliamentarians have essentially repudiated Ukraine's commitment to become a non-nuclear state and to accede to the [NPT] in that capacity" (Yushin November 23, 1993, 1). Similarly, President Clinton complained to Kravchuk that Ukraine was failing to fulfill its pledge to relinquish nuclear arms (Devroy 1993, A4).

Subsequently, Kravchuk replied that he would seek further action on START I and accession to the NPT by a new parliament to be elected in March 1994 (Devroy 1993, A4).

In December 1993, at the urging of the United States, the Ukrainians and Russians resumed negotiations to resolve the issue of removing nuclear weapons from Ukraine. Significant progress was achieved following discussions in mid-month in Moscow between Vice President Gore and Russian officials and between a senior U.S. delegation and Ukrainian leaders in Kiev (Lepingwell 1994b, 12). In early January, a second round of trilateral discussions occurred in Washington (Lepingwell 1994b, 12). By mid-January, the major provisions of the Trilateral Agreement were finalized and the document was available for signature (Lepingwell 1994b, 12). Shortly before the presidents of the three countries signed the agreement, President Clinton heralded the accord for opening "the door to new forms of economic, political, and security cooperation" (U.S. President 1994b, 45). Throughout his remarks Clinton pledged U.S. economic support for Ukraine and urged the international community to do the same (U.S. President 1994b, 46).

The Trilateral Agreement emphasized that the three countries would "deal with one another as full and equal partners" and that relations between them "must be conducted on the basis of respect for the independence, sovereignty, and territorial integrity of each nation" ("Trilateral statement by the Presidents" January 1994, 19). This provision was important for Ukraine, whose leaders believed they had been treated unequally by Russia (Lepingwell 1994b, 13). The agreement also noted "that Ukraine [would] accede to the Nuclear Non-Proliferation Treaty as a non-nuclear-weapon state in

the shortest possible time" ("Trilateral statement by the Presidents" January 1994, 19). This obligation was significant because it was identical to a commitment in the Lisbon Protocol from which the Rada had exempted Ukraine as part of its ratification of START I (Lepingwell 1994b, 13).

Additional provisions in the Trilateral Agreement were responses to points that Kiev had raised repeatedly regarding denuclearization. First, Ukraine would receive the equivalent of \$1 billion compensation for nuclear weapons removed from its territory in the form of uranium fuel from Russia sufficient to operate Ukrainian reactors for seven years (Feinstein and Wolfsthal 1994, 19; Felgengauer January 14, 1994, 1). Since Ukraine derived about 30 percent of its electrical energy from nuclear power stations this was an important provision (Lepingwell 1994b, 14). Second, the Trilateral Agreement contained security guarantees and a commitment not to use economic coercion against Ukraine (Lepingwell 1994b, 17). Third, in addition to funds already allocated to dismantle nuclear weapons, the United States pledged \$155 million in economic assistance and aid for privatization (Lepingwell 1994b, 18).

After signing the Trilateral Agreement, President Clinton portrayed the accord as an "historic breakthrough" that would open "a new era in our relationship with Ukraine," particularly "in the economic area" (Clinton January 1994, 11; U.S. President 1994a, 24). In the wake of the signing ceremony optimistic signs appeared in statements by Ukrainian officials to indicate that the agreement had widespread support (Mann 1994, 39). Moreover, the Kravchuk administration lobbied strenuously for the accord. The foreign and defense ministers spoke on Ukrainian television and radio to advocate adoption of the Trilateral Agreement (Lepingwell 1994b, 19). The administration's

arguments for the agreement were simple, yet compelling. The nuclear arsenal was useless because Russia had operational control (Lepingwell 1994b, 19). Even if Kiev gained control of the weapons, Ukraine did not have the capability to maintain a nuclear deterrent (Lepingwell 1994b, 19). Equally important, the Trilateral Agreement provided security assurances and the reactor fuel from Russia was essential to sustain the economy (Lepingwell 1994b, 19).

Rather than ask the Rada to vote directly on the Trilateral Agreement, Kravchuk requested that the parliamentarians approve a resolution that authorized the exchange of instruments of ratification of START I and accession to the NPT (Lepingwell 1994c, 39). The resolution contained three points: removal of the conditions the Rada had attached to the ratification of START I, submission of the instrument of START I ratification, and accession to the NPT as a non-nuclear weapons state (Lepingwell 1994c, 39). On February 3, 1994, the Rada voted overwhelmingly to exchange instruments of ratification for START I and the Lisbon Protocol (Lepingwell 1994c, 37). However, the parliament refused to consider accession to the NPT. The most likely reason for the Rada's inaction on the nonproliferation treaty was that Kravchuk had requested accession only two weeks earlier, which did not allow the parliamentarians sufficient time to consider and to debate the accord (Lepingwell 1994c, 40).

Several reasons seem to explain the Rada's approval for START I and the Lisbon Protocol. First, Kravchuk and other senior officials pointed out that the Trilateral Agreement fulfilled all Rada conditions for START I implementation (Lepingwell 1994c, 37). Second, Kravchuk and the defense and foreign ministers warned that the nuclear weapons still on Ukrainian territory were becoming increasingly unsafe and needed to be

removed soon (Lepingwell 1994c, 37). Third, during a visit to the United States the month before the Rada vote, a senior Ukrainian delegation reportedly obtained an American commitment to double economic aid (Lepingwell 1994c, 39). Fourth, the election of Yurii Meshkov as Crimean president may have increased support for the Trilateral Agreement (Lepingwell 1994c, 37). Meshkov advocated Crimean independence from Ukraine and closer relations with Russia, policies that undoubtedly rekindled Kiev's sense of insecurity (Lepingwell 1994c, 37). Although Meshkov's position could have diminished support for denuclearization, at this stage Kiev had garnered security assurances and economic assistance that were more valuable to Ukrainian interests over the long-term than nuclear weapons.

In November 1994, the Rada voted 301 to 8 to accede to the NPT as a non-nuclear weapons state (Keeny 1994c, 2). The overwhelming support in the parliament for the nonproliferation treaty can be attributed to several factors. First, President Kuchma argued convincingly that nuclear weapons were not in Ukraine's long-term interests and that possessing a nuclear arsenal could cost the country several billions of dollars annually (Lockwood 1994c, 17). Second, the Rada elections in March 1994 and the presidential election the following July shifted the national agenda from defense issues to economic and political reform (Garnett 1995, 12). Ukraine's leaders recognized that redressing the country's economic problems and strengthening the political system could be done only with cordial relations with Moscow and Washington. Clearly one way to attain these goals was to accede to the NPT (Garnett 1995, 12). Third, in a Memorandum on Security Assurances in Connection with Ukraine's Accession to the Treaty on the Non-Proliferation of Nuclear Weapons Russia, Great Britain, and the

United States pledged to respect Ukraine's territorial integrity and sovereignty, not to threaten or to use force against Ukraine, to seek UN Security Council action if Ukraine was threatened by a nuclear-armed state, and to abstain from using economic coercion against Kiev (Garnett 1995, 11).

In mid-May 1996, Russia agreed to provide Kiev with \$450 million in compensation for the tactical nuclear weapons removed from Ukrainian territory (Cerniello 1996, 22). Both countries agreed that the money would be used to pay Ukraine's debt to Russia for oil and gas supplies (Cerniello 1996, 22). On June 1, 1996, Kuchma announced that the last strategic nuclear weapons deployed in Ukraine had been transferred to Russia (Cerniello 1996, 22; U.S. President 1996, 984).

Returning from the Brink: Ukraine

A. Security Environment

1. Did the security environment change so that national leaders perceived less threat?

Following the demise of the Soviet Union, Ukraine was arguably less secure than it was during the preceding era. After Ukraine declared its independence, Kiev could identify a greater security threat from the northeast than it probably did from the West during the Cold War. That is, Russia's "imperial legacy" and a Ukrainian perception that most Russians did not view Ukraine as a sovereign state were the backdrop against which policymakers in Kiev defined most issues, primarily national security, between their country and Russia (Solchanyk 1993, 27).

Given this outlook, nuclear weapons could provide security in two ways. First, if Kiev possessed a nuclear arsenal neither the United States nor Europe could neglect

Ukrainian interests (Martel 1998, 91). Nuclear weapons were instrumental for Ukraine to link its security to Europe and, by extension, the United States. Once the weapons were returned to Russia this link would be severed (Martel 1998, 91). Second, "nuclear weapons provided a nearly absolute and inviolate guarantee of Ukraine's sovereignty and independence" (Martel 1998, 90). As long as Kiev retained its nuclear arsenal, Moscow would understand that an attempt to reintegrate Ukraine by force posed "unacceptably high risks for Russia's survival" (Martel 1998, 90).

2. Did additional factors associated with the security environment influence national leaders that their country should be non-nuclear?

Given that the principal threat to Ukraine was the possibility of Russian aggrandizement, security assurances seemed to be an important component in Kiev's calculation regarding whether the country would retain its inherited nuclear arsenal. In January 1993, the United States offered security guarantees to Ukraine. These included a pledge to seek UN Security Council assistance if Ukraine was threatened by a nuclear-armed state, a commitment not to use nuclear weapons against Ukraine if it acceded to the NPT as a non-nuclear weapons state, and to oppose any efforts to change Ukraine's borders by force (Lockwood 1993a, 22). Since these were, respectively, the same positive and negative assurances issued by the United States in 1968 and 1978 to all states that acceded to the NPT and the standard guarantee of territorial integrity contained in the 1975 Helsinki Final Act, Ukraine's leaders sought security assurances "tailored" to their country (Lockwood 1993a, 22). President Yeltsin offered similar guarantees if Kiev would ratify START I and accede to the NPT, but Kravchuk continued to seek additional assurances (Lockwood 1993a, 28).

In the Trilateral Agreement, Washington and Moscow provided security assurances as well as a pledge not to use economic coercion against Ukraine, guarantees that Kiev considered critical prerequisites to accept denuclearization (Devroy 1994a, A1). Moreover, the November 1994 memorandum on assurances from the United States, Russia, and Great Britain was a key element in Ukraine's accession to the NPT. Although the assurances in the memorandum reiterated similar provisions in the Trilateral Agreement, the assurances offered later were "customized" for Ukraine, which may have had the dual affect of assuaging the concerns of Ukrainian leaders and deflating opponents of nuclear disarmament (Reiss 1995a, 121).

B. Domestic Environment

1. Did a change in the attitude among national decision makers regarding military competition with potential adversaries influence a decision to be non-nuclear?

A fundamental problem in denuclearizing Ukraine was not that its leaders were overtly hostile to Russia, but that Ukrainian decision makers perceived value in retaining the arsenal to deter potential military adventurism by Moscow. The only change in attitude that needed to occur among Ukrainian policymakers concerned the sense of threat that they perceived from Russia. After Kravchuk suspended the removal of the tactical nuclear weapons one commentator concluded that a Ukrainian nuclear arsenal might alter the European geopolitical landscape, but such a change may have been necessary to dissuade Russian leaders from attempting to exert control over Ukraine (Ostalsky March 7, 1992, 7). A Ukrainian parliamentarian observed that to "guarantee its territorial integrity Ukraine [needed] at least a small nuclear potential as a deterrent" (Lartsev and Ruban 1992, 6). Accordingly, Kravchuk commented at a press conference

that Ukraine would need security assurances to become non-nuclear because its “neighbors [had] territorial claims against [it], especially [its] big neighbor, Russia” (Lockwood 1992c, 22). Clearly the problem was not changing the attitude of Ukrainian decision makers about military competition *with* Russia, but mollifying their concern about threats *from* Russia. The security assurances seemed to be crucial in this regard.

2. Did specific people or groups who supported or sustained a nuclear weapons program lose prominence or depart from the national decision making arena?

A minority of nationalist politicians in the parliament and military officers in the Ukrainian Officers Union urged retention of the nuclear arsenal, but the most formidable opponents of denuclearization neither controlled the Rada nor were sufficiently influential to sway the judgment of senior officials in the defense ministry (Garnett 1995, 11). Moreover, the issue was less that people or groups who supported a Ukrainian nuclear capability lost prominence or departed from government service than that changed circumstances altered the attitude about nuclear weapons among senior policymakers. Easing Kiev’s security concerns and providing financial compensation for the weapons were the quids pro quo for denuclearization. Once these were obtained Ukrainian leaders perceived sufficient inducements to relinquish their nuclear inheritance.

3. Did specific people or groups emerge who opposed nuclear weapons or nuclear research programs and influenced the national decision to be non-nuclear?

Leonid Kravchuk must be credited for taking the first important steps toward denuclearizing Ukraine by signing the Lisbon Protocol and the Trilateral Agreement. However, Kravchuk’s inability to resolve the nuclear issue strained relations with Russia

and erected a barrier between Ukraine and those countries in the West willing to provide security assurances and economic assistance if Kiev would relinquish its nuclear arsenal (Reiss 1995b,13). Ultimately, it was Leonid Kuchma and others in his administration who lobbied successfully for accession to the NPT (Reiss 1995b, 14). In addition to both presidents' proclivities for relinquishing nuclear weapons, other officials in Kiev were also important. The environmental minister advocated removing the SS-19 ICBMs because of the hazards posed by their liquid fuel (Reiss 1995a, 107). The defense minister explained repeatedly to Kravchuk that even if Ukraine retained the ICBMs that retargeting them against Russia would be a daunting task (Reiss 1995a, 126-27). Senior military officers pointed out that a nuclear arsenal would divert scarce resources from the basic requirements needed to sustain the military establishment (Garnett 1995, 8).

4. Did socioeconomic factors contribute to a national decision to be non-nuclear?

In light of a staggering inflation rate, escalating budget deficits, falling industrial production, and declining living standards in Ukraine, at least three socioeconomic considerations seemed to motivate Kiev's decision to relinquish its nuclear arsenal. First, prior to Ukraine's decision to accede to the NPT, Moscow threatened repeatedly to impose economic restrictions, including a halt on gas and oil shipments, unless Kiev removed the nuclear weapons. Since Ukraine relied on Russia for 90 percent of its gas and oil requirements, Moscow's threat, if fulfilled, would have deepened Ukraine's dire socioeconomic circumstances (Martel 1998, 95). Second, if Ukraine retained the nuclear arsenal a substantial investment would be required to maintain the weapons, which would have diverted funds from the country's economic and social projects (Potter 1992, 158). Third, retaining nuclear weapons would preclude access to Western financial resources

(Martel 1998, 96). Without economic assistance, Ukraine's development would lag and future prospects for socioeconomic progress would be hampered. In recognition of the need for socioeconomic growth, Kravchuk observed following the signing of the Trilateral Agreement that the greatness of nations was defined in part by their ability to develop the capacities of their people (U.S. President 1994c, 58).

5. Did certain values upon which the government was based influence a national decision to be a non-nuclear weapons state?

In spite of statements that Kiev would retain its nuclear arsenal, comments by senior Ukrainian officials suggested that the values on which the government was based accorded more with nuclear nonproliferation than with the possession of a nuclear arsenal. In 1993, Ukraine's Deputy Foreign Minister Boris Tarasiuk commented that nuclear weapons would "only hinder Ukraine in achieving its goal of taking a place among the world's most developed and influential states" (Skachko and Savtsov January 11, 1993, 1). Tarasiuk added that nuclear-free status was "a kind of pass allowing [Ukraine] to join the international community of civilized countries" (Skachko and Savtsov January 11, 1993, 1). Later, following the signing of the Trilateral Agreement, Kravchuk remarked that "Ukraine can exist only by preaching civilized norms, by pursuing a predictable policy and following the path of friendship, cooperation and partnership" (Keeny 1994a, 2).

C. Institutional-setting

1. Did the nuclear nonproliferation regime influence the national decision to be non-nuclear?

The decision by Ukrainian leaders to relinquish the nuclear arsenal seemed to be motivated more by political and economic factors than by the importance that decision makers attributed to the nonproliferation regime. By ratifying START I and the Lisbon Protocol and acceding to the NPT, Ukraine was able to obtain economic and political objectives sought by policymakers in Kiev. In other words, Ukrainian officials judged denuclearization as a pragmatic choice necessitated by vital interests, not necessarily as an unqualified recognition of the inherent value of the nonproliferation regime per se. As such, the regime probably had only an indirect affect on Ukraine's decision to relinquish its nuclear weapons.

D. Other Factors

1. Did any factor or factors in addition to those enumerated in the questions listed above influence the national decision to be non-nuclear?

At least two additional considerations may have influenced Kiev's decision to denuclearize. First, the psychological impact from the Chernobyl accident provided Kravchuk with a readily identifiable symbol to advocate acceptance of the Trilateral Agreement by imploring removal of nuclear weapons from Ukraine "because they could cause a disaster, worse than all Chornobyls put together" (Lepingwell 1994b, 19; Marples 1993b, 39).⁴⁰ Second, several European states urged Ukraine to return nuclear weapons to Russia. In particular, German officials extended enhanced relations and financial aid if Ukraine would accede to the NPT (Martel 1998, 96).

CHAPTER V

RETURNING FROM THE BRINK: CASE STUDY FINDINGS AND INTERPRETATION

As stated in Chapter I, seven countries were selected for examination using the case study method known as structured, focused comparison. This approach enables a researcher to discern similarities among cases that suggest possible generalizations, as well as differences between cases that might also be useful. The use of the same questions to examine each case provides for systematic analysis that is often absent from case studies in political science. Another special advantage of structured, focused comparison is that it has potentially greater relevance to policy problems than statistically validated generalizations (George and Smoke 1974, 97). Moreover, because the standardized questions can include variables that are germane to a particular issue policy-relevant results can be obtained by focusing on specific features of a problem (George and Smoke 1974, 97).

Since this study is concerned with identifying the reasons and a theory-based interpretation for national decisions by seven countries either to relinquish nuclear weapons or to abandon research programs with nuclear weapons potential the structured, focused comparison method is ideal. The seven countries that were chosen for examination in this study represent the population, not just a sample, of states that have returned from the nuclear brink. The reasons for examining all countries that have decided to remain or to become non-nuclear weapons states are that sampling error is

reduced and case study findings should be sufficiently comprehensive to be useful to U.S. policymakers. This may be important given efforts by the United States to develop policy to stem the horizontal proliferation of nuclear weapons. In light of decisions by India and Pakistan to break with the nonproliferation norm and to become full-fledged nuclear weapons states this particular application may be especially timely. Further, a thorough examination of denuclearization decisions also may contribute to international relations theory by interpreting the case study findings using three contemporary theories: neorealism, neoliberal institutionalism, and constructivism.

Case Study Findings

In order to ensure that the findings from the case studies are presented in the same systematic fashion as the case studies themselves, the format used in the Returning from the Brink section of each case study will be utilized again. The findings from all seven case studies are cumulated in the text that follows each question.

A. Security Environment

1. Did the security environment change so that national leaders perceived less threat?

The findings from an examination of the security environment for each of the case study countries are highly mixed. In two cases (Argentina and Brazil) changes in the regional security environment did not appear to have a primary influence on the decision to abandon research efforts aimed at producing nuclear weapons. In two other cases (Belarus and Kazakhstan) a change in the security environment did not seem to be a factor in national decisions to denuclearize. In two cases (Ukraine and North Korea) the security environment arguably deteriorated, suggesting that each country should have

retained its nuclear arsenal or sustained its weapons-oriented research program, respectively. Only in one case (South Africa) did a change in the security environment seem to influence the national decision to denuclearize.

Neither Argentina nor Brazil created its nuclear program only or primarily to develop nuclear weapons. However, the "culture of competition" that existed between them coupled with suspicions and mistrust about the other's nuclear activities impeded cooperation (Guglielmelli 1976, 165). Nevertheless, the absence of an intense adversarial relationship meant that significant improvements in the security environment were unnecessary for both countries to reverse the course of their nuclear programs and to return from the brink of nuclear weapons capability. Given the absence of a direct threat to their security, leaders in both countries seemed to recognize that a nuclear weapons program did not merit the economic burden. Importantly, the bilateral dialogue that emerged in the mid-1980s undoubtedly assuaged any lingering doubts about each country's intentions, thereby reinforcing the decision to remain a non-nuclear weapons state.

In the cases of Belarus and Kazakhstan a change in the security environment did not seem to be applicable to their decisions to denuclearize. The fact that possession of these weapons was an inheritance instead of a conscious national choice may have minimized their significance as a deterrent to foreign aggression. Moreover, neither country perceived nuclear weapons as contributing to their security. Belarusian leaders seemed to believe that the presence of nuclear weapons in their country made them a possible target for attacks by nuclear-armed states if hostilities erupted in the region. The

Kazakstanis sought Moscow as an ally to counterbalance the PRC, which necessarily entailed returning the nuclear arsenal to Russia.

From the perspective of Ukrainian and North Korean decision makers, the post-Cold War security environment probably deteriorated. For leaders in Kiev, fears about Russian aggrandizement and possible attempts to reintegrate Ukraine with Russia provided a strong rationale to retain at least part of the nuclear arsenal to deter any provocation that might originate from Moscow. For North Korea, dramatic changes in its alliance situation and an equally significant change in the correlation of military forces between it and South Korea created a security environment that militated against a decision to abandon a nuclear weapons-oriented research program. For both countries, factors other than simple calculations about possible external threats appeared to influence decisions regarding nuclear weapons.

Only in the case of South Africa did a change in the security environment seem to have a significant influence on the decision to relinquish nuclear weapons. Following the withdrawal of a foreign military presence from southern Africa and resolution of political issues between South Africa and its neighbors the rationale for a nuclear arsenal declined dramatically. The collapse of the Soviet Union and the decline of communism, which policymakers in Pretoria perceived as a fundamental threat to their independence, eliminated any residual motivation that may have existed to retain nuclear weapons. In short, the end of external threats and political isolation provided the de Klerk administration with a clear reason to eliminate the arsenal.

2. Did additional factors associated with the security environment influence national leaders that their country should become or remain non-nuclear?

An examination of factors associated with the security environment other than just a change in external threat also produced mixed results, although some trends are more identifiable. In one case (North Korea) security assurances seemed to have a positive affect on the decision to abandon a weapons-oriented research program, but the possibility of sanctions, both economic and military, did not appear to influence a decision to denuclearize. In three other cases (Belarus, Kazakhstan, and Ukraine) the extension of security assurances did appear to be key factors in decisions to relinquish nuclear weapons. In three cases (Argentina, Brazil, and South Africa) security guarantees or sanctions did not seem to influence national decisions to be non-nuclear.

In North Korea negative security assurances offered by the United States in the forms of withdrawing tactical nuclear weapons from South Korea and surrounding ocean areas, suspending annual Team Spirit military exercises, and guarantees in the Agreed Framework seemed to ameliorate anxieties in Pyongyang about its security environment and the North-South correlation of forces. However, the possible imposition of sanctions did not appear to sway North Korean thinking on the nuclear issue. The threat of economic sanctions probably had little influence in Pyongyang because the country's economy was already largely isolated from the global economy. Further, other countries in the region, namely the PRC, Japan, and South Korea, opposed economic sanctions. Similarly, when the United States contemplated air strikes in 1994, if North Korean officials were informed about this possibility by the Chinese it is doubtful that this potential military sanction had much, if any, influence, primarily because this option had even less support among regional states than economic sanctions.

In the cases of the three former Soviet republics the extension of security guarantees seemed to be key factors in their decisions to denuclearize. In Belarus the expectation of security assurances from the United States appeared to influence the Supreme Soviet's ratification of START I and the Lisbon Protocol. For Kazakhstan, the assurance contained in the Tashkent collective security agreement, the guarantee provided by the United States, and pledges of territorial integrity and nonaggression from the PRC were crucial factors in Almaty's decision to relinquish its nuclear weapons. Likewise, security assurances were so important in Kiev's thinking about elimination of its nuclear arsenal that it sought guarantees that were "customized" for Ukraine.

In Argentina and Brazil gaining security guarantees in exchange for nuclear restraint did not seem important to national decision makers for two reasons. First, neither country confronted an overt threat, so security assurances from countries like the United States were essentially political gestures with little substantive importance for policymakers in Buenos Aires and Brasilia. Second, and probably related to the first reason, given the absence of a specific threat to Argentina or Brazil the guarantees extended to these countries to induce their adherence to the nonproliferation regime were the generic positive and negative security assurances offered to all states. In other words, since the guarantees were not designed specifically for either Argentina or Brazil they only had symbolic importance.

In South Africa's case the imposition of sanctions seemed to have the opposite effect sought by countries that were attempting to induce Pretoria's adherence to the nonproliferation regime. Given South African leaders' "laager mentality," the imposition of sanctions only heightened their sense of political and military isolation. Consequently,

the perception of a severe threat to national survival coupled with a conviction that South Africa must confront external threats alone led to the pursuit of a nuclear deterrent. In short, regional circumstances were exacerbated by international sanctions, which caused Pretoria to harden its position on nuclear weapons.

The contrasts between these factors in the national security environment and how they are interpreted by the countries involved can yield important insights. In cases where states perceive security threats the extension of assurances, particularly by countries perceived as posing the threat, seemed to be critical components in denuclearization decisions. In the absence of perceived threats, security guarantees were nearly irrelevant in national decisions to be non-nuclear weapons states. The threat or imposition of sanctions against nuclear proliferators did not seem to produce desired results for reasons discussed above, and especially when states perceived themselves as politically and militarily threatened and isolated.

B. Domestic Environment

1. Did a change in the attitude among national decision makers regarding military competition with potential adversaries influence a decision to be non-nuclear?

The findings suggest that changes in the attitude among national decision makers about military competition did have a bearing on denuclearization decisions, except in three of the cases. Belarusian, Kazakstani, and Ukrainian leaders did not undergo a change in thinking about military competition with potential adversaries, because, for the most part, they sought cordial relations with their neighbors. Since the path to Belarusian independence was both less acrimonious and less adversarial than in many areas of the former Soviet Union, its leaders did not perceive an impending military competition with

Russia. Equally important, Belarus's indefensible borders and fiscal problems made it imperative that its policymakers avoid military competition with states in the region. Similarly, Kazakhstan's non-adversarial declaration of state sovereignty, as well as its geographic location and military situation meant that cordial relations with Moscow and Beijing were important. Only in the case of Ukraine was the potential for military competition a possibility. However, the problem was not changing the attitude of Ukrainian decision makers about military competition *with* Russia, but mollifying their concern about threats *from* Russia.

In the four other cases examined in this study, changes in the attitude among national decision makers about military competition with potential adversaries did influence decisions to be non-nuclear. Brazilian President Figueiredo's visit in 1980 to Argentina, during which he and Argentine President Videla signed an agreement to commit both countries' nuclear programs to "peaceful purposes exclusively" and to "oppose the development of atomic weapons," signaled a major change in each country's attitude about the "culture of competition" that had prevailed between them for decades (Carasales 1992, 52; Guglielmelli 1976, 165). Likewise, President Alfonsín's use of his first press conference to reiterate his country's intention to use nuclear energy only for peaceful purposes and later to use his first meeting with Brazil's President-elect Neves to reinvigorate an inactive nuclear dialogue were clear signals that Argentina was committed to restraining its competitive ambitions. As a consequence of efforts by these leaders and their successors, several agreements were signed and programs with nuclear weapons potential were cancelled as integral parts of a bilateral rapprochement.

In his "new dispensation" speech at the opening of the South African Parliament in early 1990, President de Klerk outlined a strategy for his country to reenter the world community that included coexistence with neighboring countries (Reiss 1995a, 41n78). A significant aspect of this new policy involved eliminating South Africa's nuclear weapons in order to contribute to "peace, stability and progress" in the region (Reiss 1995a, 20). De Klerk's pursuit of non-adversarial relations with countries in the area coupled with political settlements in southern Africa provided the rationale to destroy the nuclear arsenal.

Even on the Korean Peninsula a change in the attitude of President Kim Il Sung regarding military competition with the South seemed to provide the impetus for the settlement that led to the Agreed Framework. Undoubtedly Pyongyang's alliance situation and a shift in the correlation of military forces to favor the South influenced Kim's outlook. In light of these factors it does appear that Kim undertook a reappraisal of a decades-long policy predicated on military competition and altered the government's position regarding the United States and South Korea. The three "watershed decisions" made by Kim in 1990 to reduce the country's defense burden through an opening to the West, to normalize relations with the United States, and to coexist with the South reflected a change in attitude about military competition that provided a basis for nuclear restraint (Sigal 1998, 24).

2. Did specific people or groups who supported or sustained a nuclear weapons program lose prominence or depart from the national decision making arena?

In the former Soviet "nuclear republics" this factor did not seem to have an affect on denuclearization decisions. In Belarus senior policymakers neither advocated

retention of the nuclear arsenal nor demanded financial compensation or other concessions to return the weapons to Russia. In Kazakhstan support for retaining nuclear weapons was also nearly nonexistent. Aside from some parliamentarians who opposed START I but were not influential with senior decision makers, Kazakstani leaders did not exhibit a real interest in retaining the country's nuclear inheritance. Although Nazarbayev and some senior officials made statements about retaining the nuclear weapons, their comments were motivated by a strategy to maximize financial compensation and to obtain security assurances in exchange for the arsenal rather than a desire to become a nuclear power. Similarly, a minority of Ukrainian parliamentarians and some military officers advocated retention of the nuclear arsenal, but most senior leaders did not hold this position, especially after it was clear that Kiev would receive financial compensation and security guarantees for the weapons. Thus in Kazakhstan and Ukraine the issue was less that people or groups who supported retention of the nuclear arsenals lost prominence or left government than that the quids pro quo sought by senior officials were obtained in exchange for the weapons.

In Argentina and Brazil it is unclear whether the removal from government of people who supported each country's nuclear weapons program had a direct influence on denuclearization decisions. President Alfonsín dismissed CNEA's military director, but his successor forged ties with conservatives that delayed for nearly three years the chief executive's ability to restrain the agency's nuclear weapons effort. Moreover, the fact that Argentina's military leaders were preoccupied with criminal charges stemming from the Falkland Islands debacle and the disappearance of political dissidents may have made it easier for civilians to gain control of the nuclear program. In Brazil, CNEN's director,

a fervent advocate of the "parallel program," was dismissed and President Collor de Mello's navy minister ordered military officers and government officials opposed to the Quadripartite Safeguards Agreement (QSA) to resign. The strategy was only partially successful, however, because the Senate deferred ratification of the agreement for two years.

In North Korea it is also not entirely clear that the diminished influence of people or groups who advocated the nuclear weapons program had a direct affect on the denuclearization decision. Between late 1990 and early 1993, the influence of the "old guard" seemed to wane. However, when those who promoted reform and nuclear restraint failed to obtain concrete economic and security commitments from the United States, the influence of the "old guard" appeared to recover. Nevertheless, the influence exerted at senior policymaking levels by the reformers may have had an affect on the decision to halt the nuclear weapons program.

In South Africa it appeared that the departure from government service and the diminished influence of people committed to the nuclear weapons program did have a more direct influence on the denuclearization decision. The retirement of Drs. A.J.A. Roux and W.L. Grant, who were crucial in the early development of the South African nuclear program, eliminated key personalities from the group that advocated nuclear weapons. Similarly, the departure from government and the lessened influence of President P.W. Botha, Defense Minister Malan, and others who promoted a nuclear weapons capability thinned the ranks of those who might oppose de Klerk's denuclearization initiative.

3. Did specific people or groups emerge who opposed nuclear weapons or nuclear research programs and influenced the national decision to be non-nuclear?

In all seven cases examined in this study the emergence of people or groups who either opposed nuclear weapons research programs or existing nuclear arsenals seemed to have a direct influence on denuclearization decisions. In Argentina, President Alfonsín was key for reinvigorating the nuclear dialogue with Brasilia, but his successor, Carlos Saúl Meném, was instrumental for sustaining and deepening the rapprochement with Brazil. Meném recognized that the absence of a direct threat to Argentina's security, the country's dire economic conditions, and the need to mend relations with the United States necessitated nuclear restraint. The Argentine president was assisted by a small group of advisors who sought greater political openness and economic integration into the global economy. This group advocated "new thinking" on security, economic, and political issues. Additionally, support from the finance ministry and the private sector, such as members of the banking and export industry who sought increased foreign investment and access to world markets, bolstered Meném's activities.

In addition to opposing nuclear weapons, Brazilian President Collor de Mello held as main objectives for his administration the revitalization of Brazil's economy and its integration into the global economy. In order to achieve these objectives, Brazil required access to foreign financial assistance and advanced technology, neither of which would be forthcoming as long as Brazil remained outside the nuclear nonproliferation regime. Thus the combination of Collor de Mello's personal disdain for nuclear weapons coupled with his plans to reinvigorate the country provided a rationale for denuclearization. The Brazilian president was aided by the foreign and finance ministries, both of which were

sensitive to the political and economic ramifications of continuing to resist adherence to the nonproliferation regime. Support to preserve the country's non-nuclear status was provided by the Strategic Affairs Secretariat, which endorsed the QSA, and the scientific establishment, which had mobilized to oppose the nuclear effort and to exert pressure to halt the "parallel program." Collor de Mello and the government organizations were supported by bankers and businessmen who opposed economically unproductive defense and energy programs.

In North Korea the emergence of the Institute of Peace and Disarmament (IPD) as the primary think tank to formulate new foreign policy approaches, which included cooperating with the IAEA and reversing the nuclear weapons program, seemed to have a direct affect on Pyongyang's thinking. The Director of the Central Committee of the Korean Workers' Party was exposed to the IPD's ideas and may have shared them with Kim Jong Il, with whom he apparently had "frequent access" (Mansourov 1997, 25). Moreover, Kim Jong Il may be more pragmatic than his late father. If so, he may place economic security above military security. Interestingly, if the current trend in Pyongyang continues it may lend support to Mitchell Reiss's (1995a, 69) thesis that the "quality of political leadership" may be more important than the type of government that rules a country.

In South Africa it was clear that President de Klerk sought the dismantlement of the nuclear arsenal. The various actions taken by the president soon after his election established that one of his administration's early objectives was elimination of the weapons. Once de Klerk's intentions became clear, others in the government, such as senior officials at the AEC, supported the denuclearization initiative. In order to ensure

that the elimination of the nuclear arsenal occurred, de Klerk appointed a known opponent of the nuclear weapons program to direct the AEC and to oversee the dismantlement effort. Additionally, de Klerk appointed an independent auditor to monitor the dismantling of the nuclear weapons to preclude the diversion of fissile material and other components that might be reassembled later to reconstitute the nuclear arsenal.

In the former Soviet republics the removal of nuclear weapons was advocated by numerous individuals and groups. In Belarus the general population opposed nuclear weapons because they were linked psychologically with the Chernobyl disaster, while senior government policymakers envisioned denuclearization variously as a way to obtain Western financial aid, to rid the country of the Russian military presence, and to maintain cordial relations with Moscow by returning the weapons to Russia. In Kazakhstan the health effects caused by decades of testing spurred opposition to nuclear weapons by groups like the Nevada-Semipalatinsk Movement. Moreover, President Nazarbayev's key role in halting nuclear tests and later setting the conditions for removal of the nuclear arsenal enabled Almaty to leverage return of the weapons to Russia in exchange for financial compensation and security guarantees. Ukrainian President Kravchuk took the first steps to denuclearize his country, but a decisive role was played by his successor, Leonid Kuchma, who demonstrated with the aid of his foreign and defense ministries, the political skill and resolve to exchange the nuclear arsenal for the same quids pro quo obtained by Kazakhstan.

4. Did socioeconomic factors contribute to a national decision to be non-nuclear?

In all seven cases examined in this study socioeconomic factors appeared to be key considerations in national decisions to remain or to become non-nuclear weapons states. In Argentina and Brazil, the main objectives of Presidents Meném and Collor de Mello were to revitalize their countries' economies and to integrate them into the global economy. In order to attain these objectives both countries required foreign financial investment and access to advanced technologies for development. Each country's president and his advisors recognized that foreign resources would not be available until their country adhered to the nonproliferation regime. At the height of the nuclear crisis on the Korean Peninsula, severe economic conditions in North Korea may have been sufficient to induce Pyongyang to abandon its nuclear program in favor of potential access to external financial and technological resources for national development.

In South Africa's case nuclear weapons were a barrier to the country's reentry into the international economic mainstream. Restrictions on financial investment imposed by foreign governments and on the importation of advanced technologies hampered national development. Following de Klerk's election, eliminating the barrier to regional and international commercial activity became a priority. By destroying the nuclear arsenal South African officials were striving to alter the country's image in order to attract foreign investors and to lift restrictions on access to foreign technologies.

For the Belarusians, the reliance on trade with and energy supplies from Russia provided compelling reasons not to antagonize Moscow by refusing to remove nuclear weapons. Similarly, Ukraine's dependence on Russian oil and gas meant that an energy cutoff would have deepened the country's economic predicament, which inclined

policymakers in Kiev to return the nuclear arsenal to Russia, albeit after certain conditions were satisfied. Ukrainian leaders, especially Kuchma, were aware that the financial cost of maintaining a nuclear deterrent would divert scarce funds from economic and social projects. Further, Ukrainian decision makers recognized that retaining nuclear weapons would foreclose access to Western financial resources. In Kazakhstan, Nazarbayev's commitment to improve the economy and living standards required external financial assistance, and the Kazakstani president realized that relinquishing the nuclear arsenal was a prerequisite for foreign aid. Therefore Nazarbayev crafted and implemented a strategy to return the weapons to Russia after obtaining financial commitments.

5. Did certain values upon which the government was based influence a national decision to be a non-nuclear weapons state?

In all seven countries considered in this study the values upon which the governments were based seemed to have a positive influence on national decisions either to abandon nuclear weapons research programs or nuclear arsenals, although much of the evidence for this conclusion is inferential. In these cases the decisions and actions taken by key leaders either to halt weapons-oriented research or to eliminate nuclear arsenals appeared to be motivated in part by core ideas about desirable end-states of existence for their countries and the modes of behavior instrumental to attain them. In each case varying expressions of coexistence, cooperation, non-violent conflict resolution, and partnership in the interests of normalized political relations and economic development and modernization seemed to be important in denuclearization decisions.

In six of the cases the countries were democracies. Several of the scholars cited in this study have contended that decisions to become or to remain non-nuclear weapons states seemed to be linked with the return or emergence of democracy. In particular, they have argued that democratization sweeps away unaccountable regimes and puts in place political processes that make national leaders answerable to popular will. Accordingly, these scholars suggest that policies which can benefit the general population, such as economic development and normal political relations with other states, are far easier choices for national decision makers than nuclear weapons programs.

Other scholars, such as Mitchell Reiss (1995b, 13), have suggested that the quality of political leadership, e.g. the capacity of national decision makers to identify the “right goal” for their country, then to select the means to attain that goal, is more important than the type of government that rules a state. Although the scholars who assert the importance of democracy in denuclearization decisions have the weight of six of the seven case studies for support, the North Korean decision to restrain its nuclear ambitions does suggest that the type of government may not be critical in denuclearization choices. Values, as they are defined and used in this study, did seem to affect national decisions to return from the nuclear brink; however, it is not clear that values associated with denuclearization decisions must necessarily be associated with democratic governance.

C. Institutional-setting

1. Did the nuclear nonproliferation regime influence the national decision to be non-nuclear?

In the seven cases examined in this study, the nonproliferation regime had an indirect influence on national decisions by countries to be non-nuclear weapons states. For Argentina and Brazil, domestic and bilateral factors had a greater affect than the regime. International pressure for North Korea to fulfill its obligations under the regime, specifically the NPT, seemed to be less influential than the search by its leaders for political normalization and external economic assistance. The decision by South African leaders to comply with the nonproliferation norm after two decades of resistance seemed to indicate that they placed less value on the regime itself than on the goals they could obtain for their country by reversing the direction of their nuclear program. Similarly, the decisions by Belarusian, Kazakstani, and Ukrainian policymakers to relinquish their nuclear arsenals seemed to be based less on a recognition of the value of the regime than in a strategy to use it to obtain political and economic goals for their countries. Nonetheless, in all cases the nonproliferation regime was a legal and normative framework that was used by states opposed to the spread of nuclear weapons to affect decisions to denuclearize by the countries examined in this study.

D. Other Factors

1. Did any factor or factors in addition to those enumerated in the questions listed above influence the national decision to be non-nuclear?

In each case additional factors had some influence on the decisions by states either to remain or to become non-nuclear weapons countries. However, with the possible exception of North Korea, these factors seemed to be ancillary to broader considerations. For Argentina and Brazil, the actual or threatened imposition of technology denial strategies by nuclear-supplier states seemed only to impede but not to

prevent the nuclear weapons programs. Export controls directed at these two countries probably were the sources of at least some of the technical problems that the Argentine and Brazilian programs encountered, but alone they were not responsible for either country's decision to return from the nuclear brink. These decisions were linked much more to internal changes in both countries that manifested a search for alternative political and economic futures.

The claim by some South Africans that the denuclearization decision was motivated principally to preclude access to nuclear weapons by Nelson Mandela and the ANC seems exaggerated. As indicated in this study, Mandela had ties to Libya and the Palestine Liberation Organization, but nothing suggested that he would act irresponsibly and provide this technology to radical states or organizations. Further, well before de Klerk's speech announcing dismantling of the atomic arsenal, the ANC had made attempts to expose and to halt South Africa's nuclear program. So, while some South Africans may have believed that the motivation to eliminate the weapons was based on this reason, it does not appear that this rationale was primary for de Klerk or his senior aides.

For Belarus, foreign policy inexperience, no doubt compounded by a nuclear aversion after the Chernobyl accident, contributed to the decision to eliminate its nuclear arsenal expeditiously. In Kazakhstan the shock on the national consciousness from the Semipalatinsk legacy was an additional factor in the decision to relinquish nuclear arms. However, in neither case did these factors alone seem to be the only inducements to denuclearize. Similarly, the Chernobyl event as well as the encouragement of some European states were factors in Ukraine's decision to relinquish its nuclear arsenal.

Nevertheless, in all three cases, broader political and economic considerations were the principal motivations to denuclearize.

In North Korea's case at least two additional factors may have had a greater influence on the decision to be a non-nuclear weapons state. First, given its alliance situation and changes in the military balance, Beijing's urging that Pyongyang adopt a more conciliatory outlook toward the United States and South Korea may have had an important influence on North Korean decision makers. Second, Kim Il Sung's apparent intention to leverage his country's nuclear option in part to gain political recognition for the North Korean regime prior to the transfer of power to his son may have been an important element in a strategy to preclude external interference in North Korea's affairs after the elder Kim's demise.

In toto, additional factors did seem to influence each country's choice to remain or to become a non-nuclear weapons state. In none of the cases, except perhaps North Korea, were the additional factors among the primary elements in the denuclearization decision. In each case, as discussed in this study, broader political and economic considerations were the principal motivations to restrain national nuclear ambitions.

Case Study Interpretation

As stated in Chapter I, two research objectives were established for this study. First, to explore whether neorealism as proposed by Kenneth N. Waltz and as elaborated and refined by other scholars can explain decisions by certain countries to remain or to become non-nuclear weapons states. Neorealism has been the most prominent theory of international relations since the late 1970s. Therefore it is important to determine whether in the post-Cold War period this theory can explain decisions by states to

abjure nuclear weapons. Second, to the extent that neorealism may not be entirely adequate in this regard two alternative theories were proposed to determine if they offer a more thorough explanation for decisions by states to return from the nuclear brink.

Scholars who proceed from the standard neorealist perspective articulated by Waltz assert that the anarchic character of international politics disposes states to behave in certain functionally undifferentiated ways. Specifically, they argue, the "brooding shadow of violence" in the international system manifested by the absence of a superordinate authority and the necessity of self-help means that all states must be prepared to use violence or to "live at the mercy of their militarily more vigorous neighbors" (Waltz, 1979, 102). States that do not conform with this "logic" jeopardize their existence. For Waltzian neorealists power, primarily military power, is a crucial variable in interstate politics for states that seek to survive and to attain their interests. Force is not only the *ultima ratio* in international politics, but the first and constant one.

In light of the importance that neorealists accord power and force, it is not surprising that they claim that states are acutely sensitive to shifts in the relative balance of power between themselves and other countries. The structure of international politics and this sensitivity to relative gains locks states into a situation where avoiding an undesirable outcome, such as arms races, and producing a desirable one, such as cooperation, is nearly unattainable. States usually do not cooperate because they fear that other states will gain more and will exploit this advantage in the future. Stated differently, states often shun cooperation because they fear dependence on others for their survival and the attainment of their interests.

In order to maintain their position in the international system states seek greater amounts of military power as the surest way to avail themselves of a recourse to force to exert greater control over their security than states with lesser amounts of power. Moreover, some neorealists claim that this pursuit of power causes states to imitate the military innovations of countries with the greatest physical power capabilities in the international system. Thus the greater a state's physical power, the greater its possibility of preserving its independence and sovereignty. Accordingly, as Benjamin Frankel (1993, 43) has argued, international relations are relations of strength, and a state's strength determines both its stature and its odds for survival in the international system.

Waltzian neorealists identify few alternatives to alleviate the circumstances of international politics. The internal qualities of states such as political leadership, economic and social institutions, and ideology must be omitted from a paradigm of interstate politics, just as context and situation are set aside in order to avoid "the vague and varying...notions that are customarily employed" in analyses of international relations (Waltz 1979, 80). That is, a dichotomy between the domestic and international levels must be established that precludes the former from affecting the latter. If domestic attributes are excluded from this formulation, then the structure of the international system impels state behavior.

Further, Waltzian neorealists assign a meager role for nonstate actors, such as institutions, in international politics. Robert Gilpin (1981, 35), like Waltz, has asserted that states, especially the most dominant, establish the rights and rules of international relations. John J. Mearsheimer (1994/95, 7) has added that international institutions have no independent effect on state behavior, because they are "based on the self-interested

calculation of the great powers.” Given neorealists’ outlooks about the structure of interstate politics and its role in state behavior it is not surprising that Waltz and some other scholars conclude that international relations is the realm of power and struggle, where the imperative is “take care of yourself!” (Waltz 1979, 107).

The Waltzian paradigm does seem to explain South Africa’s decision to eliminate its nuclear arsenal. Following the settlement of regional issues and the withdrawal of the foreign military presence from the area the fundamental threats to South Africa’s survival had dissipated. Under these new circumstances the de Klerk administration could identify no rationale to retain nuclear weapons, because the necessity for greater physical power became much less important since the perception of external threat had declined dramatically. Moreover, South Africa’s decision to eliminate its nuclear weapons did not depend upon promises of non-adversarial relations from its neighbors, assurances from other states of South Africa’s survival, or any similar guarantees from international institutions. In short, South Africa’s decision to become a non-nuclear weapons state could be explained largely by neorealist propositions about state behavior.

However, in four other cases examined in this study Waltzian neorealism does not sufficiently explain denuclearization decisions by Argentina or Brazil and especially by North Korea or Ukraine. If standard neorealist theory is an accurate portrayal of state behavior under conditions of anarchy and self-help, then the decades-long “culture of competition” between Argentina and Brazil should have been sufficient to preclude a cooperative bilateral nuclear dialogue and to sustain an interest in a nuclear weapons option. In these cases the structure of international politics neither locked Argentina or Brazil into a military competition nor precluded cooperation to reverse the course of their

nuclear programs. The competition between these countries could have indefinitely "remained a very real element in the military planning of the two nations" (Redick et al. 1995, 110). However, Argentine and Brazilian leaders were able to resist the "logic" of anarchy and to set aside fear of cooperation, because they recognized that the intentions of the other state posed no direct threat to their survival.

In North Korea's case concerns about uncertain alliance commitments and changes in the military balance that favored its most likely opponent should have been sufficient for policymakers in Pyongyang to maintain an active nuclear weapons program. The most foreboding features of interstate relations described by Waltz and other neorealists confronted North Korean decision makers. The collapse of the Soviet Union, the apparent absence of unconditional Chinese support, and the military strength of South Korea militated against a decision to halt the nuclear weapons program. Nevertheless, considerations other than those linked directly to changes in possible external threats seemed to influence North Korean officials.

Ukraine's security situation after the Cold War was probably more precarious than before East-West hostilities abated. Moscow's political, economic, and military policies; nationalistic statements by Russian politicians; and the inability of most Russians to accept an independent, sovereign Ukrainian state apart from Russia provided a rationale for Kiev to retain at least part of its nuclear inheritance. Indeed, given these circumstances, if the Waltzian paradigm is an accurate depiction of international politics, then Ukrainian leaders should have sought an independent nuclear deterrent. Thus, as in the North Korean case, factors in the security environment other than a change in external threat perceptions seemed to influence Ukrainian leaders. In both cases the extension of

security guarantees by other countries appeared to affect North Korean and Ukrainian decision makers. If Waltzian neorealists' assessments of state behavior are correct this should not have occurred because, according to these scholars, states are loath to depend on others for their security. In sum, factors that neorealists omit from their paradigm seem to have been important components in denuclearization decisions.

The inability of states to cooperate according to the Waltzian paradigm is a function of the structure of the international system. If international politics are envisioned as a zero-sum game, then the neorealist perspective has validity. However, the cases examined in this study suggest that countries that abjured nuclear weapons did not perceive interstate relations so deterministically that they conformed with the "logic" of anarchy. Rather, as neoliberal institutionalists argue, under conditions of complex interdependence national interests can change in ways not explainable by standard neorealism.

Charles Lipson (1984, 14) has contended that it is the peril of defection, not the persistence of anarchy alone that makes security preparation a constant concern for states. Robert Axelrod and Robert Keohane (1986, 244) have pointed out that strategies like Tit-for-Tat can be remarkably effective to reduce defection, promote cooperation, and to lessen the imperative for states to behave in ways that are detrimental. However, the fact that Tit-for-Tat does not guarantee cooperation is illustrated in the North Korea case. The work of Leon Sigal (1998), which chronicles the negotiating behavior of North Korea and the United States and South Korea from late 1991 through mid-1994, supports the proposition that Tit-for-Tat is not a perfect strategy.

Neoliberal institutionalists note that Tit-for-Tat can promote cooperation if states expect to interact with each other for the indefinite future and if these expectations are given sufficient weight in their calculations. If high levels of uncertainty persist confidence about expectations will decline and may impel states to discount the future. In the North Korean case Pyongyang's expectations about the future seemed to involve an on-going series of meetings with trade-offs along the way involving concrete U.S. economic and security commitments to convince the "old guard" that North Korea should abandon its nuclear weapons program. For the United States and South Korea, the expectations of future interaction were based on North Korean nuclear restraint as a prerequisite for economic and security commitments. When different expectations about future interaction became apparent, serious doubts emerged on each side that caused the negotiations to stall periodically.

Similarly, each side's definition of cooperation seemed to create its own problems in resolving the nuclear issue on the Korean Peninsula. The "old guard" in Pyongyang defined cooperation as the extension of economic incentives and security assurances at various steps in the negotiations. In Washington and Seoul the definition of cooperation was North Korean nuclear restraint as a precursor for discussions on broader political, economic, and security issues. Not until President Carter's trip to Pyongyang and the change in the U.S. approach for resolving the issue were the parties able to align to a greater extent their expectations about the future and their definitions of cooperation. Moreover, it was not until nearly the end of the negotiations that each side had a clearer sense of what was actually transpiring in the relationship. At various points in the negotiations it seemed that one side or the other was unable to differentiate whether an

act was an actual defection or a bargaining maneuver, which made the Tit-for-Tat strategy tenuous at times.

In contrast to the North Korean case, the Argentine-Brazilian rapprochement suggested a less troubled application of Tit-for-Tat. First, the character of the bilateral dialogue suggested that both countries expected to continue to interact in the future despite the interruption that followed Brazilian President Figueiredo's opening in 1980. Second, the series of agreements and reciprocal visits that began in the mid-1980s demonstrated that each side was cooperating and that defections were not occurring. Third, the fact that each country reciprocated actions by the other indicated that both states had similar views of their emerging relationship. The contrasts between the North Korean and Argentine and Brazilian cases reveal the differences that can emerge between non-institutionalized and institutionalized reciprocity. In the Argentine and Brazilian cases institutionalizing the relationship in the form of agreements seemed to aid both countries in avoiding the problems that have been identified with non-institutionalized reciprocity.

Although contingent strategies like Tit-for-Tat can promote cooperation, in the absence of institutionalized arrangements, such as in the North Korean case, the potentially high costs of unreciprocated initiatives and anxiety about defection can foster doubts and suspicions that militate against cooperation. Accordingly, neoliberals contend that international institutions provide a more optimal way for states to cooperate. Institutions can monitor state behavior and provide information about that behavior to other states. As such, institutions can enable states to surmount the barriers to

cooperation. In this way the conflicts of interest between states can be resolved in order to achieve mutual gains.

Robert Keohane and Lisa Martin (1995, 42) have pointed out that regimes, one form of international institutions, can make a difference in interstate relations in conjunction with the power realities described by the Waltzian neorealists. When regimes facilitate the attainment of state objectives that are unattainable by independent action or attainable only at a higher cost, then states may be more inclined to use regimes to achieve their interests. In other words, as Arthur Stein (1983, 132) has argued, states can forgo independent decision making under conditions of complex interdependence because of calculated self-interest. Regime adherence is not grounded in altruism or idealism, but is interest-based.

Institutionalized cooperation through regimes can lead states to restrain individualistic behavior not because they abandon national calculations of interest, but because of a shift in decision criteria. Ernst Haas (1983, 28) has suggested that states adhere to regimes when they seek a "good" that cannot be attained or attained only at higher cost through autonomous action. In several cases examined in this study the proposition offered by Haas seemed to be supported by the decisions of national governments that calculated that adherence to the nuclear nonproliferation regime could provide certain "goods." That is, obtaining economic assistance and security guarantees were crucial elements in the calculations by several countries either to remain or to become non-nuclear weapons states.

Similarly, Jeremy Mayer (1996, 52) has pointed out that regimes also can be used to forge linkages among issue-areas. In the cases examined in this study some support

for Mayer's proposition seemed to exist. The nonproliferation regime linked the objectives of states that seek to halt the spread of nuclear weapons to the interests of states that either abandoned nuclear weapons programs or relinquished nuclear arsenals. Stated differently, the regime linked the nonproliferation objective of several states with the political, economic, and security concerns of the seven countries that returned from the nuclear brink. Calculations of self-interest, not altruism or idealism, seemed to underlay the denuclearization decisions.

When the costs or risks of individualistic security policies are great enough, states have incentives to participate in regimes. These institutions can reduce the risk of interstate cooperation under conditions of anarchy and self-help by establishing standards of behavior and by providing information about others' conformance with those standards. In short, states may recognize that their security interests are served better by a regime than by individualistic action. In the countries examined in this study, in some cases the costs of maintaining independent nuclear capabilities militated against an arsenal, while in other cases the risks of possessing nuclear weapons outweighed the benefits. As a way to remain or to become a non-nuclear weapons state, while simultaneously being less anxious about national security, neoliberals would argue that the nonproliferation regime provides an alternative to nuclear-arming or living at the mercy of one's militarily more vigorous neighbors.

Other scholars have argued that interstate cooperation need not be based on just rationalistic calculations of national interest. Ronald Jepperson, Alexander Wendt, and Peter Katzenstein (1996, 74) have observed that the security domain has been transformed partially by a reordering of national agendas to subordinate military

functions to other concerns, such as national development, and by drawing states into the global economy. These and other constructivist scholars contend that new ideas about interstate relations influence and shape countries' views about national security. For the constructivists, the important questions in international relations include: What are the sources of the interpretations of the world that states hold? and How do these sources influence individual and state actors?

Wendt (1992, 394) has argued that self-help and power politics are due to process, not structure. They are parts of individual and collective cognitions that are constitutive of actors' identities and interests. People act toward objects, including other people, on the basis of the meanings the objects have for them, e.g., "friend" or "enemy."

Constructivists do not contend that the material basis of international politics is unimportant, only that it is not final arbiter of political outcomes in interstate relations. Rather, identities formulated within states and from their interactions constitute the basis for national security.

Glenn Chafetz (1993, 137) has noted that security identity is based on the values of national governments and the history of interactions with other states. If a government holds coexistence and cooperation with other countries as a desirable end-state of existence and recognizes the modes of behavior instrumental to attain that end-state, then circumstances are propitious in part for the construction of a cooperative security identity. For example, in the cases of Belarus and Kazakhstan the values of these new governments and the absence of hostile interactions with other states probably contributed to their denuclearization decisions. For Argentina and Brazil, the values upon which the governments were based, as well as a "culture of competition" that did

not preclude bilateral rapprochement, facilitated the formation of security identities that made nuclear restraint a more attainable, albeit protracted, process. Similarly, the values of the de Klerk administration coupled with the resolution of regional political issues erased the basis for hostility between South Africa and its neighbors that contributed to the elimination of Pretoria's nuclear arsenal.

Conversely, even if a government holds coexistence and cooperation with other countries as a desirable end-state of existence and recognizes the modes of behavior instrumental to attain that end-state, past interactions with other countries may make it difficult to eliminate competitive security identities. The history of hostile interactions between North Korea and the United States and South Korea no doubt contributed to Pyongyang's hesitation to abandon its nuclear weapons option. Similarly, Ukraine's troubled past with Russia and its fear of Russian aggrandizement contributed to its reluctance to relinquish all nuclear weapons deployed on its territory. Constructivists would contend that since self-help is an effect of practice, altering the practices between North Korea, Ukraine, and certain other states was necessary to mitigate the effect of past interactions. That is, policymakers in Pyongyang and Kiev required signals from certain governments that they could interpret to form cognitions, i.e., "friend" or "enemy," about states of concern to them. If the constructivist perspective is accurate on this point, then the gestures by other states were key elements in North Korea's and Ukraine's decision to denuclearize. The fact that both countries withheld their adherence to the non-proliferation regime until they received security assurances suggests some support for constructivist theory on this point.

Other constructivists like Paul Kowert and Jeffrey Legro (1996, 462-68) have suggested that norms can be the basis of national identity- and interest-formation. Although numerous questions have been raised about the use of norms in international relations, Kowert, Legro, and other scholars have noted the intriguing possibility that norms can influence national identity and interests in ways that contradict the strategic imperative of the international environment. For example, some constructivists might interpret the declarations of non-nuclear status by the Belarusian and Ukrainian parliaments as the influence of a norm on the formation of a specific security identity and definition of national interests that included cooperative relations with other states and integration into the global mainstream. Richard Price and Nina Tannenwald (1996, 144-45) have offered that norms that delegitimize nuclear weapons and self-help can influence denuclearization decisions. Unlike the deterministic influence of structural constraints on state behavior, the acceptance of norms as an influence on identity- and interest-formation is a conscious national choice.

Although constructivists differ somewhat about the nature of identity- and interest-formation they agree that states can surmount the security dilemmas that they create. The capacity of states to solve these dilemmas is not merely an issue of altering the price of cooperation, but a matter of creating new definitions of self in relation to others. Constructivists hold that states do engage in such critical self-reflection, and they make choices based on these reevaluations that manifest changes in identity and interest. Emanuel Adler, Beverly Crawford, and Jack Donnelly (1991, 28) have described such national self-reassessments as "cognitive evolution." This process of intellectual

innovation and selection of ideas becomes the collective description and normative set of understandings about what is necessary to advance a state's interests.

Cognitive evolution in the constructivist formulation leads states to recognize that certain images and preferences are dysfunctional. In turn, this awareness can manifest new national identities and preferences. Learning by policymakers increases the capacity to understand new interpretations of the world and to consider changes in national preferences and to adopt new courses of action. In the seven cases examined in this study it did seem that national decision makers had evaluated their choices regarding nuclear weapons based on the introduction of ideas from the external environment, ideas that influenced the domestic choice to abandon nuclear weapons programs or to eliminate existing arsenals. Moreover, people and groups at the domestic level who opposed nuclear weapons were influential with like-minded national leaders who sought to alter their country's image and to pursue interests at the international level that did not include a competitive security identity.

Peter Haas (1992, 2) has pointed out that knowledge-based experts can play an important role in helping leaders to resolve complex problems by framing issues for debate, by proposing specific solutions, and by identifying salient points for negotiations, *inter alia*. These epistemic communities can be essential to ensure that ideas necessary to formulate new identities and to define new interests seep into the consciousness of policymakers and other influential officials. In the countries examined in this study, three epistemic communities were readily discernible: President Meném's senior advisers in Argentina, the scientific community in Brazil, and the Institute for Peace and Disarmament in North Korea. In each case, these groups performed functions identified

by Haas that seemed to be key factors in the nuclear roll-back decisions made by their countries. In all three cases these groups promoted "new thinking" on political, security, and economic issues that included abandoning certain national images and modifying national preferences generally with the conviction that the welfare of their respective states would be improved.

The preceding discussion suggests that Waltzian neorealism is not adequate to interpret the denuclearization decision of more than one of the countries examined in this study. Although neoliberal institutionalism and constructivism provide more insights into national decisions to remain or to become non-nuclear weapons states, neither theory is suitable to interpret these decisions entirely. Each theory is useful to interpret certain actions by some states, but is less illuminating in other instances. Perhaps the difficulty arises because national choices to be non-nuclear weapons states are multifarious decisions that may not be amenable to theories whose analytic frameworks focus too closely on specific features of state behavior and the factors that influence and shape that behavior. Thus more thorough interpretations of denuclearization decisions may reside within the purview of intellectual inquiries by scholars who have endeavored to refine and to elaborate neorealism, and thereby synthesize, either consciously or unconsciously, this theory with elements of neoliberal institutionalism and constructivism.

The work of Gottfried-Karl Kindermann (1985) is one such inquiry that seems to be serviceable in this regard. Kindermann acknowledges the role of power and by extension force in international politics, but departs with Waltzian neorealists by asserting that these factors are neither the only nor the most important determinants of interstate relations. Although Kindermann's Munich School retains certain elements of

the standard neorealist paradigm, Kindermann ascribes significance to factors usually associated with the neoliberal institutionalists and constructivists, such as institutions and intersubjective influences. Additionally, the Munich School emphasizes the interaction of domestic and international variables within a context that is both more dynamic and historical than the deterministic and ahistorical perspectives espoused by Waltzian neorealists. The multifaceted character of the cases examined in this study suggests the potential utility of approaches like Kindermann's cross-disciplinary, two-level analysis.

Other scholars also have extended the neorealist framework by articulating a theory of state action which bridges domestic and international politics. Michael Mastanduno, David Lake, and G. John Ikenberry (1989) have argued that domestic and international politics are interactive because issues in one area spill over into the other. That is, governments act at the domestic level to meet international challenges, and they take actions at the international level to respond to domestic problems. The cases examined in this study lend support for this proposition. In several countries the decision to remain or to become non-nuclear weapons states was a choice at the domestic level to meet a challenge at the international level, namely appeals from the nuclear non-proliferation community to abandon weapons options or existing arsenals. These decisions were not capitulations to external pressure, as some government officials made clear, but were acts at the international level to respond to specific domestic problems, such as the need obtain resources for socioeconomic development.

In another inquiry into the international-domestic nexus, Jennifer Sterling-Folker (1997) has argued in an examination of the basis for including domestic considerations into systemic theory that national-level decisions are germane at the international-level.

Unlike Waltzian neorealists who portray the structure of international politics as creating certain imperatives for states, Sterling-Folker envisions the international environment as a background of constraints and possibilities against which decision makers in domestic realms involved with domestic processes make assessments and choices relevant in interstate relations. The cases examined in this study suggest support for this proposition. Countries that opted to remain or to become non-nuclear weapons states resisted the impulse to conform to Waltzian "logic" to attain more inclusive national interests.¹ That is, the structure of the international system was a backdrop for, not a determinant of, national policy choices made at the domestic level involving domestic processes by decision makers pursuing broader political, economic, and security interests than allowed by standard neorealism.

These decisions were made by national leaders who sought an end-state of existence that included domestic economic development and normalized political relations with other countries. Clearly a crucial aspect of the instrumental behavior to attain such an end-state entailed abandoning nuclear research programs with a weapons dimension or existing nuclear arsenals. In an inquiry to reformulate neorealism, Charles Glaser (1994/95, 59) has observed that self-help "tells us essentially nothing about whether states should prefer cooperation or competition." Rather, as Kindermann, Mastanduno et al., and Sterling-Folker have suggested, it is the domestic and international context of state interaction, not just the structure of the international system, that influences national decision makers to make certain choices. When that context poses costs or risks for the possession of nuclear weapons that outweigh their perceived

benefits, then coaction among states, even competitors, to reduce uncertainty about intentions can lead to cooperative instead of competitive security systems.

The intellectual inquiries labeled as variants of neorealism in this study are potentially useful heuristic frameworks for international relations scholars and policymakers alike. For scholars these inquiries offer two-level, multi-factor analyses that may reveal clues about state action that are not illuminated by other approaches. For policymakers these inquiries may provide greater insights into why states decide to acquire or to abjure nuclear weapons. As indicated in Chapter I, one aspect of this study was to identify policy-relevant results about denuclearization decisions. Toward that end, the next section offers several nonproliferation policy implications suggested by this study.

Conclusion: Some Policy Implications

Implication One: Nuclear nonproliferation should be part of a broader policy directed towards states that acquire or seek nuclear weapons.

Efforts to convince countries that nuclear weapons do not serve their national interests must address national security concerns, but need to include political and economic components as well. As suggested by the selective literature survey in Chapter I, threats to national security have been a primary motive for states to pursue a nuclear weapons capability. However, cases examined in this study suggest that the resolution of security threats was only one element in national decisions to denuclearize that also included political and economic considerations.

At the outset, initiatives to create incentives for countries to return from the nuclear brink must identify ways to resolve the threats to national security that impel a

nuclear weapons capability.² In several cases in this study assurances were offered in an attempt to assuage national security concerns in exchange for decisions by countries to remain or to become non-nuclear weapons states. In three cases (North Korea, Kazakhstan, and Ukraine) guarantees from potential adversaries seemed to be especially important in denuclearization decisions. This is not a claim that security assurances are the preferred remedy in every case, but it does suggest that unless steps are taken to ameliorate threat perceptions the probability of achieving nonproliferation goals may be impeded from the outset.

Additionally, as cases examined in this study have revealed, political and economic factors also influenced several countries' positions on nuclear weapons. North Korean First Vice Minister Kang's proposal for a "package solution" intimated that resolution of the nuclear issue also needed to include political and economic factors, which the U.S. subsequently indicated it was willing to extend in the forms of political recognition of Pyongyang and investments in the North's economy. Later, after Carter's visit to North Korea, President Clinton stated that if Pyongyang halted its nuclear program the United States was prepared to discuss the "full range of security, political, and economic issues that affects North Korea's relationship with the international community" (U.S. President 1994e, 1327). This broader policy perspective paved the way for the Agreed Framework and resolution of the nuclear issue.

Similarly, Ukrainian nuclear disarmament achieved limited progress until after a Clinton administration internal policy review suggested that the nonproliferation effort needed to be part of a long-term relationship between Kiev and Washington that included security, economic, and political considerations. In other cases examined in this study

foreign economic assistance, access to advanced technology for national development, and other factors not related to the security environment were important in decisions to abandon nuclear weapons programs or to eliminate existing arsenals. Thus nuclear nonproliferation efforts must address security issues, but also need to include political and economic factors meaningful to states that are being influenced to adhere to the nonproliferation regime.

Implication Two: An integral aspect of the broader policy approach outlined above should include the avoidance of sanctions against known or suspected proliferators.

Sanctions rarely have the unconditional support of states upon whose commitment they depend. Moreover, sanctions as an instrument to prevent the horizontal spread of nuclear weapons have not had the intended effect. Indeed, as some cases in this study have shown, the threat or imposition of sanctions exacerbated perceptions of threat and political isolation that hardened countries' positions rather than induced conformance with the nonproliferation regime. The implication seems clear: unless there is a consensus among states whose support is necessary to impose sanctions *and* the target state is susceptible to such pressure, then this measure will probably not achieve nonproliferation goals and may even worsen a situation.

Implication Three: Successful nonproliferation initiatives may require long-term engagement and monitoring.

If efforts to prevent the further spread of nuclear weapons are to be durable, then long-term engagement by members of the nonproliferation community may be necessary. In regions where nuclear aspirations seem to have been dampened, such as the Korean Peninsula, long-term monitoring of political, economic, and military conditions may be

necessary to preclude a reversal of nonproliferation. In the case of North Korea the Agreed Framework will not be fully implemented until after 2003. In the interim, monitoring by the United States, Japan, and South Korea will be an important component to ensure that the termination of Pyongyang's nuclear weapons program remains a lasting achievement. Likewise, monitoring any nonproliferation gains that could be made in other regions may require similar long-term commitments.

Implication Four: International efforts to promote nuclear nonproliferation will continue to be important, but alternative approaches also may be equally useful.

Although the concerted activities of many countries will undoubtedly be necessary to create the political, military, and economic conditions to dampen incentives for states to acquire nuclear weapons, all solutions need not be based on multilateral action. As this study has shown, some countries harbor doubts about the nonproliferation regime because it seems to create a global society of nuclear "haves" and "have-nots" divided into states judged to be responsible custodians of nuclear weapons and those that cannot be trusted. In some cases resentment towards the regime is directed against a standard of responsible behavior formulated by the same countries that created the regime and imposed it on other states.³ Moreover, some countries perceive the IAEA not as a UN agency to guide and to develop peaceful uses of atomic energy, but as a tool to be used to enforce compliance with the nonproliferation regime.

Where these outlooks exist the nonproliferation community should not be loath to encourage alternative approaches to stem the further spread of nuclear weapons. The activities of Argentina and Brazil are instructive in this regard. Both countries opted initially to remain outside the international nonproliferation regime, yet they surmounted

their "culture of competition" through a series of reciprocal visits to nuclear facilities and formal agreements that institutionalized a path towards bilateral rapprochement. Further, by creating the Permanent Committee on Nuclear Affairs to replace a joint working group, Argentina and Brazil found a venue for cooperation and nuclear restraint. Ultimately, regional cooperation probably set the stage for both countries to accept international safeguards.

In areas of the world where mutual distrust and suspicion preclude a direct dialogue between states, then an approach modeled on the U.S., Russia, and Ukraine trilateral initiative could be helpful. In this case the United States used its relations with Russia and Ukraine to promote a dialogue that led to the Trilateral Agreement and the transfer of nuclear weapons from Ukraine to Russia. In other regions states probably cannot rely on an outside party to resolve the disputes that impel their nuclear weapons programs, but they may be able to use third parties to help them to stabilize nuclear competition as a prelude to the resolution of deeper conflicts. Of course, nuclear restraint does presume that national policymakers equate it with the attainment of broader goals. Implication Five: Stemming the further spread of nuclear weapons may require a new definition of nonproliferation "success."

The United States and other countries that advocate adherence to the nonproliferation regime have traditionally defined "success" in absolutist terms. That is, nonproliferation efforts are deemed to be successfully when a country known or suspected to be developing nuclear weapons halted its activities, exposed both the history and physical elements of its program to external scrutiny, and convinced the international community that its nuclear program no longer posed a threat to peace and stability.

According to this formulation, South Africa, Argentina, and Brazil would be examples of nonproliferation success. However, by this standard North Korea would be only a partial success.

As critics of the Agreed Framework have argued, much uncertainty remains about North Korea's *past* nuclear activities. IAEA inspections still have not occurred at the two suspected waste storage sites at Yongbyon. The final resolution of this issue may not occur until the end of the second phase of the Agreed Framework, which could last until 2003, unless budget shortfalls in the United States and financial crises in Asia continue to hamper full implementation of the Agreed Framework. As such, it may be unclear, at least in the near-term, whether Pyongyang constructed one or two or three nuclear weapons. It is on this point that a new definition of "success" may be necessary in the interest of bolstering the prospect of nonproliferation progress.

Efforts to reverse the course of nuclear weapons programs in countries of proliferation-concern may require that "success" be defined in the near- and long-terms. In the near-term, halting countries' nuclear weapons activities and creating an institutionalized framework for future relationships between those states and the international community could be defined as nonproliferation success. In the longer-term, integrating countries more deeply into the global community through the resolution of security issues and with political and economic inducements may encourage greater openness about past nuclear activities. Even if such disclosures are not forthcoming the fact that states have halted nuclear weapons activities and equate their national security with political normalization and economic development probably obviate the proliferation problem. If the context within which known or suspected nuclear weapons

states find themselves can be stabilized and if expectations of future interaction with the global community are given weight in national calculations, then it would be more likely that such countries would return from the nuclear brink, as suggested by the cases examined in this study.

Future Research

Perhaps the most fascinating research problem suggested by this study and recent events in southwest Asia concerns whether the type of government in a country affects decisions about nuclear weapons. Many scholars who have examined some of the countries used in this study have contended that the emergence of democracy was a key factor in decisions to remain or to become non-nuclear weapons states. However, Mitchell Reiss (1995a, 69) has put forth the idea that the quality of political leadership in a country may be more important than the type of government.

An examination of this possibility seems warranted not only by the novelty of the proposition but also by developments on the subcontinent, namely detonations of nuclear devices by India and Pakistan and declarations by both countries that they are nuclear weapons states. India's prime minister stated that his country's decision to conduct the tests was motivated by the presence of "an overt nuclear weapon state on [its] borders, a state which committed armed aggression against India in 1962" and the presence of a neighbor that had "become a covert nuclear weapons state" (Vajpayee 1998, A12). Two questions remain unanswered by the Indian decision to detonate nuclear explosives. Why did Indian leaders suddenly feel so threatened by the PRC and Pakistan that they were compelled to respond with nuclear tests, especially when both governments have made overtures to improve relations with New Delhi?⁴ Perhaps more importantly, why does

democratic India now apparently perceive a greater threat from democratic Pakistan than it did during the years when non-democratic governments ruled from Islamabad?

The Indian and Pakistani cases suggest that factors other than democracy may be crucial elements in national choices to abstain from nuclear arming. It may be the case that a search by India's leaders for international prestige impelled the decision to test nuclear weapons (Burns 1998a, 1). Or, the tests could have been motivated by politicians seeking political support for a tenuous fourteen-party ruling coalition led by the Hindu revivalist Bharatiya Janata Party (Burns 1998b, sec. 4, p. 10). Or, the tests could be part of a wider strategy formulated by Indian nationalists in the government to incite Hindu assertiveness on the subcontinent (Burns 1998c, sec. 4, p. 4). Equally important, Pakistan's decision to detonate nuclear devices as a response to India's tests may portend that the more pacific behavior of a democracy towards other democracies postulated by some scholars may not be sufficient to quell nuclear-arming under certain circumstances. Clearly the issue of political leadership and other questions concerning the interaction of domestic and international factors raised by events in southwest Asia merit further research, particularly if India and Pakistan, and perhaps other countries in the future, are to be persuaded to return from the nuclear brink.

NOTES

Chapter I

1. These mechanisms, known collectively as the international nuclear nonproliferation regime, are a set of principles, norms, rules, and procedures that "attempt to regulate the international spread of technology and to constrain the ability of states to acquire a nuclear-weapons capability" (McGrew 1984, 4). As such, this regime represents "an aggregation of multilateral, bilateral, unilateral, formal and informal arrangements aimed at stopping the spread of nuclear weapons" (Davis 1993, 86).

2. Donald M. Snow (1996, 3) has noted that not only is the threat of war among the major global powers virtually nonexistent, even the threat of interstate violence among most regional adversaries seems unlikely.

3. Some scholars prefer not to use the term neorealism, but use terms such as "structural analysis" (Frankel 1993, 68n18), "structural realism" (Glaser 1994/95, 50n1), "modern realism" or "new realism" (Gilpin 1986, 301), or "systemic realism" (Sterling-Folker 1997, 5). In order to avoid confusion and extraordinarily fine distinctions, the term neorealism will be used to refer to the work of Kenneth N. Waltz, perhaps the most well-known neorealist, as well as works of scholars whose writings have elaborated and refined Waltz's thinking about international politics.

4. Glenn Chafetz (1993, 148n3) has noted that "unlike the classical realists E.H. Carr, Reinhold Niebuhr, and Hans Morgenthau, who found that the human need for security and power drove state behavior in the international environment, neorealists like Kenneth Waltz and John Mearsheimer believe that the anarchical structure of the international system impels states to seek power" to preserve their security. Accordingly, as Waltz (1979, 126) has observed, "power is a means and not an end."

5. In the literature constructivism is sometimes called "reflectivism" (Chafetz 1993, 148n7), "critical theory" (Mearsheimer 1994/95, 37n128), or "constructivism-reflectivism" (Dougherty and Pfaltzgraff 1997, 162-63). In this study this school of thought will be referred to simply as constructivism.

6. Not all scholars with a neorealist orientation draw as sharp a dichotomy between domestic and international politics as Waltz. Several of these scholars are discussed in this study as "variants of neorealism."

7. Robert O. Keohane (1989, 3) has defined institutions as “persistent and connected sets of rules (formal and informal) that prescribe behavioral roles, constrain activity, and shape expectations.” He has noted that international institutions can take three forms: formal intergovernmental or cross-national nongovernmental organizations, international regimes, or conventions. Since an international regime, i.e., the nuclear nonproliferation regime, is of interest in this study this sub-section is titled “institutional-setting.”

Chapter II

1. Waltz (1979, 79) has defined a system as being composed of “a structure and interacting units.”

2. Robert Gilpin (1986, 305) has echoed the primacy of state survival because the attainment of other goals “will be lost unless one makes provision for one’s security in the power struggle” among states.

3. For Waltz (1979, 96) a sovereign state is a country that “decides for itself how it will cope with its internal and external problems....”

4. Waltz (1979, 74) does not deny that cooperation among states may occur; however, if it does it is in “ways strongly conditioned by the anarchy of the larger system.” In Waltzian terms this explains the limits that the structure of the international political system imposes on interstate cooperation.

5. Historically one is hard-pressed to identify nonstate actors that satisfy Waltz’s criterion. Waltz (1979, 88) has said that the medieval papacy of Innocent III is one example. A more contemporary example may be the European Union (EU), which some scholars have characterized as “a polity in the making” (Pierson and Leibfried 1995, 464). Other observers of the Union are more dubious about its individual member states assuming a lesser role vis-à-vis EU nonstate actors, because “the Community has been, is now, and will remain a community of states” (Cameron 1992, 74).

6. Frankel’s position on the rate and scope of horizontal nuclear proliferation is somewhat at variance with the second term in Waltz’s definition of political structure. Frankel (1993, 57) argues that the “reasons for the slow pace of nuclear proliferation during the last four decades are clear: in a bipolar world, the two superpowers provided security, including nuclear guarantees, to their client states.” This viewpoint suggests that states perform differentiated functions in the international political structure, i.e., the superpowers’ security guarantees prevented some states with the economic and technical wherewithal from acquiring nuclear weapons. Such an international division of labor does not accord with Waltz’s argument that states are undifferentiated in their need to provide for their own security.

7. The information in this paragraph is from John J. Mearsheimer (1994/95). Although his essay refers to the realists, he says that his thinking is "closer to Waltz than to Morgenthau" (Mearsheimer 1994/95, 9n20). Therefore I use the term neorealism when I discuss his work in this study.

8. On the subject of power, Mearsheimer departs somewhat from Waltz's position. Mearsheimer (1994/95, 9) argues that "each state strives not only to be the most powerful actor in the system, but also to ensure that no other state achieves that lofty position." Waltz (1979, 126) states that "the first concern of states is not to maximize power but to maintain their position in the system." The different interpretations reflect two neorealist views of power; it is the difference between absolute gains (Mearsheimer) and relative gains (Waltz).

9. Kindermann does not define actions-systems, but his use of the term presumably includes both state and nonstate actors.

10. Waltz (1979, 82) insists that concerns such as "analysis of the character and personality of political actors, consideration of the conflictive and accommodative processes of politics, [and] the description of the making and execution of policy...[be] left aside."

11. Mastanduno, Lake, and Ikenberry (1989, 458-59) are considered in the neorealist framework not only because they place the state at the center of their analysis, but also because their analysis is based on the propositions that international anarchy and the pursuit of power are key to grasp international politics.

12. Sterling-Folker (1997, 2n2) prefers the term systemic realism to neorealism, but since she is referring to "the work of Waltz and his followers" I use the term neorealism for consistency in this study.

13. The term "shapes and shoves" is from Waltz (1986, 343).

14. Helen Milner has offered useful insights into the argument that domestic processes can and do influence interstate behavior. In her estimation "the issue is whether it is possible and/or fruitful to abstract from all domestic politics," because "all states are not the same; and their internal characteristics...affect international politics importantly" (Milner 1991, 81). According to Milner (1991, 81), "the differences among states...are not trivial and may be useful to conceptualize for understanding international relations better." James N. Rosenau and Mary Durfee also assert the influence of internal state processes on interstate relations. They contend that "domestic variables are often as important as the challenges and circumstances emanating from abroad in forming the sources of behavior" (Rosenau and Durfee 1995, 60).

15. Paul Schroeder also challenges Waltz's claim that states are functionally undifferentiated. He says that "during every period of the Westphalian era, states of various sizes defined their place and role within the system, and were accorded status and recognition by other states, not simply according to their positions of power, even relative to other adjacent units, but also, and often mainly, on the basis of their specific functions within the system" (Schroeder 1994, 124). Contrary to Waltz, who maintains that states are not functionally differentiated, Schroeder has shown that states aware of their vulnerability to external threats have used specialization to offset threats. For example, he has discussed how Great Britain, Russia, the United Netherlands, Switzerland, Denmark, Sweden, the Papal State, and the smaller German states all performed specialized functions to preserve their existence that were not connected to Waltz's concept of self-help (Schroeder 1994, 126-27). Edward Rhodes has also suggested that states can be functionally differentiated. He has proposed that in the late twentieth century collective efforts to achieve international order could presage increased military specialization among states (Rhodes 1995, 82-83). The United States with its comparative advantage in high-technology forces could concentrate on naval forces, tactical aircraft, satellites, and electronic capabilities, while relying on other states for less advanced forces, such as ground units (Rhodes 1995, 83).

16. Regarding this criticism, Waltz (1979, 31) would note that "logic alone does not write theories," since "the question is not what does logic permit, but what does theory require." In Waltz's theory states are juxtaposed by their power, i.e., the difference in their power is the clearest expression of their behavior.

17. Buzan made similar arguments in an earlier essay in which he proposed that states adopt a security concept of international relations. The principal objective in this concept of interstate behavior was the preservation and enhancement of the order-producing effects of military power within the anarchic international political system, while simultaneously attempting to minimize disorder-producing effects (Buzan 1984, 123). This could be accomplished if states generate a sensitivity to the impact of their behavior on other states at least equal to their sensitivity of the impact of the behavior of other states on them (Buzan 1984, 123). Further, this requires that states commit themselves to resolve political problems in political, not military, terms (Buzan 1984, 123). Buzan readily concedes that the objective is neither simple nor easy, because the challenge is to ensure one's own security while not posing threats to the security of other states.

18. Glaser (1994/95, 52) labels his refinement of neorealist thinking as "contingent realism."

19. Extensive debates have occurred among defense scholars concerning which military forces should be considered offensive and which should be seen as defensive. It is not part of the purpose of this study to add to that debate, but it is important that states be able to differentiate between offensive and defensive forces, if they seek to avoid the uncertainty and insecurity that often accompany interstate relations. Buzan (1987, 109) has noted that "the problems of which condition [offensive or defensive] prevails, and for

how long, not only reflects relations between individual rivals, but also the stability of the international system as a whole." Stated differently, "when the defensive is dominant, aggression is more difficult, and military security easier to achieve, than when...conditions favor the offensive" (Buzan 1987, 109-10).

20. Several terms in this sentence require definitions before proceeding with the discussion of neoliberal institutionalism. Principles are "beliefs of fact, causation, and rectitude"; norms are "standards of behavior defined in terms of rights and obligations"; rules are "specific prescriptions or proscriptions for action"; and decision making procedures are "prevailing practices making and implementing collective choice" (Krasner 1983b, 2). Cooperation refers to a situation where "the policies actually followed by one government are regarded by its partners as facilitating realization of their own objectives, as the result of a process of policy coordination" (Keohane 1984, 51-52). Cooperation is distinguished from both harmony and discord. When harmony exists "actors' policies *automatically* facilitate the attainment of others' goals," but when there is discord "actors' policies hinder the realization of others' goals, and are not adjusted to make them more compatible" (Keohane 1988, 380). Cooperation is manifest when "each party changes his or her behavior *contingent on* changes in the other's behavior" (Keohane 1988, 380). "Genuine cooperation improves the rewards of both players" (Keohane 1988, 380).

21. The terms in Ashley's criticism require some explanation. Statism refers to the neorealist view of the state as an unproblematic, indivisible entity that exists independently of human interests (Ashley 1984, 238). Utilitarianism refers to the standard neorealist outlook that "there are no rules, norms, mutual expectations, or principles of practice...independent of the actors, their essential ends, and their capabilities" (Ashley 1984, 245). Positivism is used in a sense not dissimilar from Auguste Comte; that is, knowledge should be value-neutral, it should define reality that accords with relationships that are independent of subjective human judgments, and the truth of claims and concepts is tested by their correspondence to external experience (Ashley 1984, 248-50). Structuralism pertains to the belief among some neorealists that the structure of the international system has an existence that is independent of its elements, a view that reduces politics to "pure technique" (Ashley 1984, 260). Absent from this perspective is "any hint of politics as a creative, critical enterprise by which men and women might reflect on their goals and strive to shape freely their collective will" (Ashley 1984, 260). The outlook of some neorealists discounts "both the normative aspirations of society and the normative potential of institutional arrangements that challenge the state system" (Falk 1992, 225).

22. See Robert G. Gilpin (1986) and Kenneth N. Waltz (1986) for responses to Ashley's criticism of neorealism. Also, see John J. Mearsheimer (1994/95, 37-47) for a reply to "critical theorists" like Ashley.

23. The term "neoliberal institutionalism" was originated by Robert O. Keohane (1989, 2).

24. Charles L. Glaser (1994/95, 68-70) believes that states can take specific measures to signal benign intentions to each other, but his approach is rooted firmly in the neorealist outlook that it is individual states that undertake actions vis-à-vis other states. Glaser (1994/95, 83-84) "does not establish an important role for institutions...in making cooperation possible." Neoliberal institutionalists believe that "properly designed institutions can help [states] to cooperate..." (Keohane 1984, 84). This is a fundamental difference between scholars with a neorealist orientation and the neoliberal institutionalists.

25. Complex interdependence exists among states when there are multiple issues, multiple channels of contact among societies, and military force is an inefficient method to attain most policy objectives (Keohane 1984, 40). Additionally, complex interdependence is "a condition under which it is not only difficult to use conventional power resources for certain purposes, but under which information levels are relatively high due to the existence of multiple channels of contact among states" (Keohane 1986b, 197). For neoliberal institutionalists, information and information-provision among states are important because states "behave differently in information-rich environments than in information-poor ones where uncertainty prevails" (Keohane 1986b, 197). Keohane apparently refers to the quality, not just the quantity, of information available to national leaders, since a high volume of low quality information would not necessarily reduce uncertainty. Further, Keohane must also presume that available information is genuine; that is, its content is not intended to deceive or to mislead national leaders to whom it is communicated.

26. When players, whether they are individuals or states, are rational utility maximizers they will examine their choices among options in a situation and weigh the utilities of specific outcomes by their probabilities of occurrence, then they will choose the option with the highest weighted sum in order to maximize their payoff (Levy 1992, 173).

27. Numerous objections have been raised about using the Prisoner's Dilemma to describe state behavior. First, it oversimplifies state behavior and the processes that states use to attain their interests. Second, it does not portray the cognitive or perceptual components of state behavior. Third, because it deals with only two absolute choices (i.e., cooperate or defect), it does not illuminate the nuances of state behavior. Fourth, the Prisoner's Dilemma limits state interaction to a single game, whereas real-world interstate activity is rarely so circumscribed (Lipson 1984, 10-11).

28. Robert O. Keohane (1989, 3) has defined institutions as "persistent and connected sets of rules (formal and informal) that prescribe behavioral roles, constrain activity, and shape expectations." Douglass C. North (1990, 3) has envisioned institutions as "the rules of the game" that "shape human interaction." Jack Knight (1992, 2-3) has described institutions as "a set of rules that structures social interactions in particular ways." These definitions vary somewhat, but they all suggest a common element: institutions constrain and shape human behavior.

29. Robert O. Keohane measures institutionalization by commonality, specificity, and autonomy. Commonality refers to "the degree to which expectations about appropriate behavior and understandings about how to interpret action are shared by participants in the system" (Keohane 1989, 4). Specificity pertains to "the degree to which these expectations are clearly specified in the form of rules" (Keohane 1989, 5). Autonomy concerns "the extent to which the institution can alter its own rules rather than relying entirely on outside agents to do so" (Keohane 1989, 5).

30. Robert O. Keohane has suggested the use of Douglass C. North's (1984, 256) definition of transaction costs: "the costs of specifying and enforcing the contracts that underlie [an] exchange." North's definition can be interpreted to mean that international institutions can change the various costs associated with making and keeping agreements among states. Keohane (1984, 83) has noted that in economic theories of market failure the difficulties encountered by actors are not due to the inadequacies of the actors, but can be attributed to the structure of the system. Similarly, the difficulties that emerge between states are not due to the states, but may be imputed to the structure of the international political system; that is, factors such as anarchy, distributed power, and the nature of self-help. In short, "specific attributes of the system impose transaction costs...that create barriers to effective cooperation among" states (Keohane 1984, 83). International institutions "are formed as ways to overcome the deficiencies that make it impossible to consummate even mutually beneficial agreements" (Keohane 1984, 83).

31. The term issue-area refers to "a recognized cluster of concerns involving interdependence not only among the parties [involved] but among issues themselves" (Haas 1980, 365).

32. Since the nuclear nonproliferation regime is an important part of this study, several pages are devoted to the examination of regimes within the context of neoliberal institutionalism.

33. Keohane's definition of regimes is more parsimonious than some scholars, because he limits the term to institutions with explicit rules that are negotiated among states. Unlike Krasner, who also includes implicit principles, rules, norms, and decision making procedures in his definition, Keohane (1989, 17n5) believes that including implicit regimes begs the question of whether state behavior is actually rule-governed.

34. Insofar as interstate cooperation is concerned, a joint action is Pareto-optimal if "there does *not* exist an alternative action that is at least as acceptable to all and definitely preferred by some" (Raiffa 1968, 199).

35. Stephen D. Krasner also discussed a third group of scholars strongly influenced by the Grotian tradition, named for Hugo van Groot, better known as Grotius, whose 1625 publication, *De jure belli ac pacis* (*The law of war and peace*), established the intellectual basis for rights and responsibilities in interstate behavior (Fenwick 1965, 59). The Grotians are not discussed in this study because their view of international relations departs fundamentally from the views offered by the neorealists and neoliberal

institutionalists. Specifically, the Grotians see regimes "as a pervasive phenomenon of *all* [emphasis mine] political systems" (Krasner 1983b, 8). They believe that regimes exist in all areas of international relations and that national leaders are almost always constrained by international regimes (Krasner 1983b, 8).

36. Even if they do not adhere to regimes this does not mean that states are independent of one another (Stein 1983, 132n34).

37. Ernst B. Haas (1980, 368) has defined knowledge as "the professionally mediated body of theory and information that transcends lines of cleavage." It is not important that such knowledge may incorporate "questionable metaphors, imperfect analogies, exaggeration, and other epistemological sins..." (Haas 1980, 368). What does matter is that knowledge transcends lines of cleavage (Haas 1980, 369). Such knowledge normally originates among specialists who claim relevance for it, but knowledge related to an issue acquires salience "only after it has seeped into the consciousness of policymakers and other influential groups and individuals" (Haas 1980, 369). Once this occurs and policymakers lay claim to knowledge, it will dominate the policy process and will eventually change lines of cleavage (Haas 1980, 369-70).

38. Robert O. Keohane (1983, 154) derived this list by inverting the Coase theorem. In an essay published in the *Journal of Law and Economics*, R.H. Coase (1960, 13) offered that under certain circumstances actors could bargain to attain mutually beneficial outcomes in the absence of rules governing legal responsibility. If applied to international politics the Coase theorem suggests that states could achieve collective action through bargaining and mutual adjustment. Coase did identify three conditions for his theorem to operate. There must be "a legal framework establishing liability for actions, presumably supported by government authority; perfect information; and zero transaction costs" (Keohane 1984, 87). If all of Coase's conditions are met, then ad hoc arrangements would be costless and international regimes would be unnecessary (Keohane 1983, 154). However, as Keohane (1984, 87) has pointed out, "none of these conditions is met in world politics." Thus, by inverting the Coase theorem, Keohane has proposed to identify the elements of a demand theory of international regimes.

39. For the purposes of this study, security regimes are defined as "those principles, rules, and norms that permit nations to be restrained in their behavior in the belief that others will reciprocate" (Jervis 1983, 173).

40. The failure of the Baruch Plan was predictable. The international authority that was to control all nuclear facilities and materials was to be immune from UN Security Council veto, which would have denied the Soviet Union any influence over an agency that would have been decidedly pro-Western. The Soviets offered a counterproposal that the United States deemed unacceptable. Given mounting suspicions and growing tensions between the two countries the notion of creating an international agency to control nuclear resources faded (Carnesale, Doty, Hoffmann, Huntington, Nye, and Sagan 1983, 80-81).

41. The term constructivism is from Nicholas Onuf (1989, 1), who has contended that "people always construct, or constitute, social reality, even as their being, which can only be social, is constructed for them." For Onuf, activities are political when they are important enough to engage the attention of people. "When those activities extend beyond the immediate, established locale within which members of a social unit ordinarily act on their urgent concerns, international relations result" (Onuf 1989, 2).

42. Identity refers to the varying constructions of statehood across countries that are "enacted domestically and projected internationally" (Katzenstein 1996, 6). This definition is similar, albeit slightly different, to another concept of identity offered by Alexander Wendt (1994, 385), who has suggested that identity has "both individual *and* [emphasis mine] social structural properties, being at once cognitive schemas that enable an actor to determine 'who I am/we are' in a situation and positions in a social role structure of shared understandings and expectations." As such, "social identities" not only embody the terms of individuality by which actors, e.g., states, relate to each other, but also the terms that lead actors to discern certain situations as requiring certain actions and defining their interests in certain ways (Wendt 1994, 385).

43. Ronald Jepperson, Alexander Wendt, and Peter Katzenstein (1996, 74) have argued that the national security domain has been partially transformed for two reasons. First, interstate relations have been changed to some extent because states are reordering issues on national agendas and subordinating military functions to other concerns, such as national development. Second, as states are drawn into the global economy "state actorhood is partly reconstructed around less militaristic lines" (Jepperson et al. 1996, 74). There are regional variations to this trend, such as "'atavistic' political entities," e.g., Saddam Hussein's Iraq, that pose obstacles to a more peaceful international community (Rhodes 1995, 81). However, it is noteworthy that the security discourse "no longer renders states inevitably as war machines locked into natural Darwinian competition" (Jepperson et al. 1996, 74). On this point, Daniel Deudney (1993, 27) has observed that the destructiveness of nuclear weapons has led to a situation where "security in the nuclear era requires polities to re-program their security institutions to permanently accept the impossibility" of a monopoly on violence capability. This may account, at least partly, for the progress in U.S.-Soviet arms control between 1987 (when the treaty eliminating short- and intermediate-range nuclear missiles was signed) and 1991 (when the first strategic nuclear arms reduction treaty was completed), as well as decisions by some states in the 1990s to relinquish a nuclear weapons option or existing arsenals.

44. Constructivists view institutions as a "set or 'structure' of identities and interests" (Wendt 1992, 399). Although institutions may be formal norms and rules, fundamentally they are "cognitive entities that do not exist apart from actors' ideas about how the world works" (Wendt 1992, 399). Actor "identities and collective cognitions do not exist apart from each other; they are 'mutually constitutive'" (Wendt 1992, 399). This is not to imply that institutions for constructivists are merely intangible, nonobjective beliefs, because as collective knowledge they possess an existence "over and beyond the individuals who 'happen to' embody them at the moment" (Berger and

Luckmann 1966, 58). For constructivists, institutionalization is a process whereby actors internalize new identities and interests. Institutionalization is not something that occurs outside of actors and affects only their behavior; it is a cognitive process, not just a behavioral or management activity (Wendt 1992, 399).

45. Glenn Chafetz (1993, 137) has observed that states identify their security based on two factors: the values of national governments and the history of interactions with other states.

46. Norms are "collective expectations for the proper behavior of actors with a given identity" (Katzenstein 1996, 6). A discussion of the various sources of norms is available in Paul Kowert and Jeffrey Legro (1996, 469-83). Questions have been raised about the use of norms in international relations, but this challenge is not intended to subvert the normative approach used by constructivists. Rather, it is to suggest that resolving certain methodological and theoretical issues would improve the application of this approach to international relations theory. See Kowert and Legro (1996, 483-97) for a discussion of these questions.

47. Of course, neorealists like Kenneth Waltz would dispute the notion that a norm could (or should) influence national leaders not to obtain certain types of weapons, such as nuclear arms, or that certain weapons necessarily endanger global peace and stability. Indeed, Waltz (1981, 28) has written that the "slow spread of nuclear weapons will promote peace and reinforce international stability." Waltz (1995, 113) reiterated this theme in a published debate with Scott D. Sagan by noting that the states that oppose horizontal nuclear proliferation should focus more on making their own large arsenals safe and "less on keeping weak states from obtaining the small number of warheads they may understandably believe they need for security."

48. Values are "a relatively small number of core ideas or cognitions present in every society about desirable end-states of existence and desirable modes of behavior instrumental to their attainment that are capable of being organized to form different priorities" (Rokeach 1979, 49).

49. Constructivists claim that security dilemmas as effects of practice instead of constitutive features of anarchy can be resolved, but they do not assume that this is inevitable. The persistence of security dilemmas has two explanations. First, "changes in the international system may force states to reconsider their world roles, but these states cannot completely discard or transform the myths and institutions left over from their previous role..." (Richter 1992, 274). Once constituted a security dilemma confronts states as an objective reality that reinforces certain behavior and punishes other behavior (Wendt 1992, 411). Under such circumstances change is contingent upon whether interstate relations provide latitude "to deviate from the prescribed script" (Wendt 1992, 411). If not, the security dilemma will persist and those states that do not conform their behavior to the situation will, in Waltzian terms, "fall by the wayside." The second reason why security dilemmas may endure is more psychological than systemic. State identities and interests "are rooted not only in the desire to minimize uncertainty and

anxiety, manifested in efforts to confirm existing beliefs about the social world, but also in the desire to avoid expected costs of breaking commitments made to others--notably domestic constituencies and foreign allies..." (Wendt 1992, 411). When new knowledge or practices emerge the cognitive dissonance that may result could solidify adherence to existing identities and interests and preclude changes that could ameliorate a security dilemma. Systemic and psychological factors may prolong competitive security systems, but for constructivists security dilemmas are not irrevocable facts of international politics.

50. Socialization refers to a "process of learning in which norms and ideals are transmitted from one party to another" (Ikenberry and Kupchan 1990, 289). Learning pertains to "the adoption by policymakers of new interpretations of reality, as they are created and introduced to the political system by individuals and institutions" (Adler 1991, 52).

51. John Gerard Ruggie (1975) introduced the term *epistemes*, which he acquired from Michel Foucault's *The order of things* (1973), into the international relations literature. The term refers "to a dominant way of looking at social reality, a set of shared symbols and references, mutual expectations and a mutual predictability of intention. Epistemic communities may be said to consist of interrelated roles which grow up around an *episteme*; they delimit, for their members, the proper construction of social reality" (Ruggie 1975, 569-70). The use of the term by many constructivists, including Peter M. Haas, is often at a lower level of abstraction than Ruggie. These scholars generally use the term to refer to a collection of people who share the same worldview and in particular share the four characteristics described in the following note (Haas 1992, 27).

52. Epistemic communities can consist of individuals from any discipline or profession who have a sufficiently strong claim to a body of knowledge (Haas 1992, 16). The characteristics normally attributed to members of an epistemic community are a shared set of normative and principled beliefs; shared causal beliefs, which are derived from their analysis of practices leading or contributing to a central set of problems in their domain and which serve as the basis for elucidating the multiple linkages between policy actions and desired outcomes; shared criteria for weighing and validating knowledge in their areas of expertise; and a set of common practices identified with a set of problems to which their professional competence is directed, generally with the conviction that human welfare will be improved (Haas 1992, 3).

53. An example of an epistemic community is available in Robert G. Herman (1996, 273), who has argued that "the momentous turn in Soviet international policy was the product of cognitive evolution and policy entrepreneurship by networks of Western-oriented in-system reformers coincident with the coming to power of a leadership committed to change and receptive to new ideas for solving the country's formidable problems." In this example, international affairs specialists (*mezhdunarodniki*) in influential positions in research institutes of the Academy of Sciences who were committed to cooperation with the West found a more receptive atmosphere in Mikhail Gorbachev's "new thinking" and were able to influence a new Soviet identity and national interests. Herman does not apply the term epistemic community to the

mezhdunarodniki because he believes that "the networks of reform-minded specialists... do not fit the decidedly technical knowledge-based criteria employed by the concept's most prominent theoreticians, including Peter M. Haas" (Herman 1996, 284n41). However, Haas does not limit the membership of epistemic communities to individuals with a technical knowledge-base. Epistemic communities can consist of "individuals from any discipline or profession who have a sufficiently strong claim to a body of knowledge that is valued by society" (Haas 1992, 16). "Nor need an epistemic community's causal beliefs and notions of validity be based on the methodology employed in the natural sciences; they can originate from shared knowledge about the nature of social or other processes, based on analytic methods or techniques deemed appropriate to the disciplines or professions they pursue" (Haas 1992, 16). Thus Herman construes too narrowly the meaning of epistemic communities. By virtue of their shared determination to reverse the Kremlin's foreign and defense policies, a commitment to jettison Marxism-Leninism as a guide to define national identity and interests, and advocacy of conciliatory measures to persuade other countries of the Soviet Union's nonhostile intentions, the *mezhdunarodniki*, as well as like-minded party and state *apparatchiks*, do satisfy, at least minimally, Haas's criteria to qualify as an epistemic community.

54. Emanuel Adler (1991, 54) has noted that crises and shocks can have an important affect on policymakers because they provide a "punch" to reveal that existing patterns of behavior have become dysfunctional and even dangerous.

Chapter III

1. The creation of a fusion reaction is a complex undertaking. Since the reaction involves fusing light isotopes such as hydrogen, which are naturally repellent due to their electrical charges, it requires extremely high temperatures. Only at 10 to 100 million degrees Kelvin are fusion reactions possible. By contrast, the temperature inside the sun is 14 million degrees Kelvin (Cochran, Arkin, and Hoenig 1984, 26). In recent years several researchers have claimed they achieved so-called "cold fusion," a reaction at room temperatures. All of these assertions have been attributed either to poor science or debunked as frauds.

2. Argentina's decision to build a heavy water plant can be traced to the mid-1950s when the government decided to use the country's large deposits of uranium in its nuclear reactors rather than to rely on foreign supplies of enriched uranium (Serrano 1994, 235). In reactors fueled with natural uranium heavy water, i.e., water containing more deuterium than occurs naturally, is necessary to slow, but not absorb, neutrons necessary to sustain a fission reaction.

3. The Nuclear Suppliers Group was created following a U.S. proposal in 1974 after the Indian detonation of a nuclear device. The principal purpose of the group has been to ensure that suppliers of nuclear technology adhere to a comprehensive set of guidelines to preclude peaceful cooperation from being used to manufacture nuclear weapons.

4. The Treaty of Tlatelolco, known formally as the Treaty for the Prohibition of Nuclear Weapons in Latin America and the Caribbean, prohibits, *inter alia*, the possession, acquisition, storage, or testing of nuclear weapons by parties to the agreement within the treaty zone, which encompasses the area from the U.S.-Mexican border to the southern tip of South America. The treaty also requires states party to the accord to develop full-scope safeguards agreements with the IAEA and to use nuclear materials only for peaceful purposes (Wolfsthal 1992d, 27). The NPT was designed to prevent the horizontal spread of nuclear weapons; to provide assurances, through the application of international safeguards, that peaceful nuclear activities in states that have not developed nuclear weapons are not diverted to producing such weapons; to promote, consistent with other treaty provisions, the peaceful uses of nuclear energy, including the potential benefits of peaceful nuclear explosives technology; and to promote among the signatories progress in comprehensive arms control and nuclear disarmament (U.S. Arms Control and Disarmament Agency 1990, 95).

5. Breeder reactors, as the name suggests, produce more fissionable material than they consume. Many years ago some experts believed that because they could produce a nearly inexhaustible supply of nuclear fuel they were a promising technology to provide low-cost electricity, especially in developing countries. However, breeder reactors pose a serious proliferation problem because as net producers of plutonium they yield fissionable material that can be used in nuclear weapons. For this reason and the realization that breeder reactors are uneconomical to operate as power sources, the technology has not been well-developed or used widely (Gardner 1994, 12).

6. The capacity to produce uranium enriched to a level of 20 percent of the isotope U-235 is significant because enriching to the level of 93 percent of U-235, which is normally required for nuclear weapons, entails "relatively little extra work" (Gardner 1994, 6).

7. In addition to this "positive" security assurance, in 1978 the United States issued a policy statement regarding "negative" assurances (U.S. Arms Control and Disarmament Agency 1990, 94). At the UN Special Session on Disarmament, Secretary of State Vance stated that the United States would not use nuclear weapons against any non-nuclear state party to the NPT or any comparable international agreement, "except in the case of an attack on the United States, its territories or armed forces, or its allies, by such a state allied to a nuclear weapons state, or associated with a nuclear weapons state carrying out or sustaining the attack" (U.S. Arms Control and Disarmament Agency 1990, 94). Both types of security assurances have remained U.S. policy, and both were reaffirmed by the Clinton administration in early 1995.

8. In a gas centrifuge uranium hexafluoride is spun at high velocity to separate U-235 from U-238. The heavier U-238 atoms converge near the outer walls of the centrifuge, while lighter U-235 atoms are concentrated near the center (Gardner 1994, 22). This is a highly efficient method to produce weapons-grade uranium; however, the

technology requires high-quality precision engineering and poses certain maintenance problems related to the corrosiveness of the gas.

9. Some influential Brazilian intellectuals, such as the geopolitician Golbery do Couto e Silva, asserted that Brazil's size, population, and industrial capacity established the country as a legitimate regional hegemon (Myers 1984, 888). Additionally, the existence of European and African cultures in Brazil led some to conclude that Brazil could function as a bridge between the first and third worlds (Myers 1984, 888).

10. Becker technology is an aerodynamic uranium enrichment method that involves "blowing" uranium over a curved surface to separate U-235 from U-238 (Gardner 1994, 22).

11. After the sinking during the Falkland Islands war of an Argentine heavy cruiser by a British nuclear-powered attack submarine, both Argentina and Brazil expressed interest in nuclear submarines for coastal defense (Milhollin and Weeks 1991, 27). The principal advantage of nuclear-powered submarines is their capacity for long-duration submerged cruises, a capability the nuclear-powered navies used for extended patrols during the Cold War. However, given the high capital investment to procure nuclear-powered vessels and the availability and lower-cost of diesel-powered boats, Argentine and Brazilian arguments for nuclear-powered submarines for coastal defense were ill-conceived, if not altogether hollow.

12. Although American experts were divided over whether the Cachimbo shaft was designed for a nuclear test, all agreed that Brazil did not possess the resources necessary to mount a program to produce nuclear weapons when the existence of the site was disclosed (Reiss 1995a, 51; Spector 1990, 246). In September 1990, President Collor de Mello ordered the destruction of the Cachimbo shaft (Homewood 1990, 14; Redick, Carasales, and Wrobel 1995, 113). In a subsequent speech before the UN General Assembly, Collor de Mello assured the audience "that the shaft is being covered up with concrete and that we are not going to enter into any nuclear adventure in Brazil" (Albright 1990, 13).

13. When it was revealed in 1990 that the submarine propulsion reactors envisioned by Brazil would require uranium enriched to only 4 percent U-235, not the higher percentage originally indicated, more questions were raised about the real purpose of the Aramar facility (Albright 1990, 15).

14. Brazilian interest in nuclear power plants grew in a period when electrical energy consumption was rising at 10 percent per annum, a rate that led most planners to conclude that the country's hydroelectric capacity could not maintain pace. Thereafter, however, electrical consumption declined and reassessments of Brazil's hydroelectric potential showed that it was adequate to supply the country's needs into the next millenium (Goldemberg 1985, 83).

15. In 1990, Brazil's Secretary of Science and Technology disclosed that the "parallel program" had been intended to develop weapons by utilizing skills learned from the civilian nuclear program (Clegg 1993, 62).

16. In the literature there are two spellings for this town: Foz de Iguazú and Foz do Iguaçu. The former is the Spanish spelling, while the latter is Portuguese. The Spanish spelling is used for consistency in this study.

17. This facility was the Army Technological Center (CETEX), which housed a small sub-critical graphite reactor containing bars of natural uranium and requiring an external neutron emission source to operate (Albright 1990, 14). Ostensibly designed to produce enough plutonium for one nuclear weapon every two years, the reactor's power rating was reduced from 20 to 2 megawatts to "make it clear that the Army [had] no intention of getting plutonium to make nuclear weapons" (Albright 1990, 14).

18. Condor 2 was a two-stage, solid-propellant ballistic missile under development with Egypt and Iraq, until both withdrew their financial support in the late 1980s. This missile was the focus of considerable international attention because it was believed that the vehicle could carry a 500 kilogram (1,100 pounds) payload to a range of at least 900 kilometers (486 miles) (Nagler 1992, 20). If this missile had achieved operational status, some experts believed that it would be capable of carrying a nuclear warhead.

19. Insofar as this variable is concerned throughout the remainder of this study values are used in the sense defined by Rokeach (1979, 49).

20. The failure of the Alfonsín administration to adopt full-scope safeguards could be attributed more to domestic exigencies than to an insufficient influence of democracy on a change in Argentine nuclear policy. Alfonsín confronted a myriad of problems that seemed to consume his attention: Perónist legislators opposed to his plans, a worsening economy, and a military fearful of prosecutions for its incompetence during the Falkland Islands war and for abuses against political opponents during the period of junta rule (Spector 1990, 227). Solving these problems was no doubt deemed more important for the durability of the government than resolution of the safeguards issue. Further, beyond Figueiredo's visit to Argentina in 1980, little else transpired in the area of cooperative nuclear restraint until after the return of democracy to Argentina. Under Alfonsín's government bilateral agreements were signed between Argentina and Brazil concerning nuclear restraint, in addition to reciprocal visits to nuclear facilities.

21. An excellent discussion of the transition from military rule to democracy is available in Wendy Hunter's *Eroding military influence in Brazil: Politicians against soldiers*.

22. North Korea is known officially as the Democratic People's Republic of Korea (DPRK). For brevity in this study it is referred to as North Korea. Likewise, the Republic of Korea (ROK) is referred to as South Korea.

23. In these reactors milled uranium pellets are inserted into hollow magnesium oxide (magnox) rods. The rods are placed inside a welded steel vessel with a graphite core, which serves to moderate the velocity of neutrons necessary to sustain the nuclear reaction (Chanda 1994b, 18).

24. The other conditions stipulated by the Bush administration were that Pyongyang reduce its vitriolic anti-American rhetoric, cease terrorist activity, assist in returning the remains of several thousand U.S. military members missing-in-action from the Korean War, and initiate a dialogue with Seoul (Reiss 1995a, 235).

25. The United States issued a negative security assurance in 1978 that it would not use nuclear weapons against any non-nuclear state party to the NPT or any comparable international agreement. However, this assurance was voided if attacks occurred against "the United States, its territories or armed forces, or its allies, by [a non-nuclear country] allied to a nuclear weapons state..." (U.S. Arms Control and Disarmament Agency 1990, 94). Since North Korea was allied with the Soviet Union and the PRC, both nuclear-armed states, the security assurance would not apply if it attacked South Korea. This may explain the Kim regime's insistence on a negative security assurance that specifically proscribed the use of nuclear weapons against North Korea, apparently under all circumstances. In an address to the Asia Society in January 1991, Assistant Secretary of State Richard Solomon stated that the United States posed "no nuclear threat to North Korea" (Lehman 1993, 263). In the same speech Solomon reiterated the language from the 1978 assurance, obviously to remind North Korean leaders that America's nuclear deterrent still extended to South Korea and that the original criteria for an assurance against a U.S. nuclear attack were extant.

26. Asian scholar Robert Scalapino and the former commander of U.S. Pacific Command, Ronald Hayes, claim that they urged President Bush days before his announcement "to [make] it possible for the South Korean Government to announce that there [were] no nuclear weapons on South Korean soil" in an apparent opening to the North (Awanohara 1991b, 10). Within the U.S. government there was not unbridled enthusiasm for Bush's announcement. State Department officials were generally positive about the idea, but some Defense Department officials were concerned about compromising South Korea's security (Awanohara 1991a, 25). Under Secretary of Defense (Policy) Paul Wolfowitz opined that to "suggest that our defense arrangements with South Korea are the cause of all of this [North Korean mischief], I think, is just quite wrong and absurd" (Awanohara 1991a, 25).

27. In actions that generally characterized the North-South relationship, within ten days of signing the accord the North Korean Central News Agency vilified President Roh as a "puppet" and leader of "military fascist gangsters" (Cumings 1992, 14). At the same time, the South Korean government sought a long prison sentence for a radical student leader charged under the National Security Law with "benefiting the enemy" (Cumings 1992, 14).

28. North Korea later resisted closing the laboratory. Aside from the obvious conclusion that Pyongyang sought to reprocess the spent fuel to recover plutonium for weapons, another reason may have been environmental concern (Albright and Hibbs 1992, 39; Barnaby 1993, 97). The magnox rods containing the highly radioactive and toxic spent fuel can deteriorate rapidly after removal from the reactor. North Korean leaders may have been concerned that without the reprocessing plant they would possess no capability to dispose of thousands of corroding fuel elements, unless they were prepared to pay to have them shipped and reprocessed elsewhere.

29. U.S. insistence on early implementation of the safeguards agreement seemed to be rooted in disturbing disclosures about North Korean intentions. In testimony before the House of Representatives Foreign Affairs Committee, CIA Director Robert Gates said that he was dubious about Pyongyang's intention to abide by the Joint Declaration because his agency had "some information...that they have a deception plan for hiding their nuclear capabilities" (Fessler 1992, 480). Suspicions apparently persisted and influenced the American attitude regarding early application of the January safeguards agreement, the implementation of which some U.S. officials believed was urgent because they had "incontrovertible evidence that Pyongyang [was] developing a nuclear bomb" (Awanohara 1992, 12).

30. IAEA analyses indicated three separation efforts in 1989, 1990, and 1991 – more than Pyongyang declared to the agency (Albright 1993b, 10).

31. IAEA interest in the sites was probably heightened by the presentation of aerial photographs taken in 1989 and 1992. The earlier photographs showed pipes linking the plutonium recovery plant with waste storage tanks, but in the later images the tanks were concealed beneath a warehouse and the area had been landscaped to cover the pipes (Chanda 1994a, 16).

32. Chapter I, Article II(7) of the UN Charter establishes that although "nothing contained in the present Chapter shall authorize the United Nations to intervene in matters which are essentially within the domestic jurisdiction of any state...this principle shall not prejudice the application of enforcement measures under Chapter VII," which authorizes the Security Council to consider actions for actual or potential breaches of international peace (United Nations 1945, Chapters I and VII). Nothing legally proscribed North Korea's decision to withdraw from the NPT or to develop nuclear weapons after its withdrawal, but some nonproliferation proponents believed that Pyongyang's actions and potential activities were sufficiently dire to merit invoking UN measures under Chapter VII of the Charter.

33. From a nonproliferation standpoint, LWRs would improve the situation in North Korea because they produce less plutonium than natural uranium/gas-graphite reactors. However, since LWRs produce plutonium they are only proliferation-resistant, not proliferation-proof (Gardner 1994, 32).

34. Regarding North Korea's acquisition of the LWRs, Gallucci was explicit about the conditions: "It is understood that the United States cannot engage in any peaceful nuclear cooperation with [North Korea], or support others in assisting [North Korea], until [it] has unambiguously complied with its nonproliferation obligations" (Wolfsthal 1993b, 21).

35. Even after the nuclear crisis on the Korean Peninsula abated reports persisted about the North's alleged nuclear capability. In April 1997, Hwang Jang Yop, a high-ranking North Korean official, defected to the South. An essay written by Hwang was published in the South Korean newspaper *Chosun Ilbo* in which the author claimed that Pyongyang was "capable of turning South Korea into a sea of flames and can completely annihilate the South with nuclear...weapons..." (Pollack 1997, A12). In light of known connections between *Chosun Ilbo* and the South Korean intelligence service, doubts were expressed about Hwang's assertion. Three months later, Hwang recanted his allegation, noting that "since I am not an arms expert, I do not know exactly what types of weapons the North has" ("Lacks nuclear proof" 1997, A9).

36. Selig Harrison, a scholar at the Carnegie Endowment with connections to North Korea's leadership (Mazarr 1995b, 1-3), has stated that he proposed the idea and components of the freeze to North Korean leaders during a visit to Pyongyang shortly before Carter's arrival (Harrison 1994, 20). He credits Carter with persuading Kim to accept the idea of an immediate freeze of unspecified duration while U.S.-North Korean talks occurred (Harrison 1994, 20). Harrison also believes that the results of the Carter trip enabled President Clinton to abandon the U.S. policy that established resolution of the nuclear issue as a prerequisite for broader negotiations (Harrison 1994, 20).

37. Clinton's message, while positive, was also cautionary. He characterized the developments of Carter's diplomatic mission "not [as] a solution, but a new opportunity to find a solution" (Wolfsthal 1994c, 20).

38. At this juncture, the subject of special inspections seemed to recede, at least temporarily, as an immediate U.S. priority, although it did not appear to be foreclosed altogether by Pyongyang. President Kim implied that special inspections were unlikely "before the end of our hostile relations" (Chanda 1994h, 15). This cryptic statement enabled two disparate interpretations. For skeptics of North Korean intentions, Kim's statement suggested that perhaps resolution of the nuclear issue was not near and that North Korean leaders were merely creating further barriers to progress. For others, like Alan Romberg at the U.S. Institute of Peace, Kim's statement meant that IAEA inspections of the North's nuclear activities would "take place only in the context of a deal" (Chanda 1994h, 15). Romberg believed that once North Korea gained political recognition, security assurances, and economic assistance it would reveal more about its nuclear program (Chanda 1994h, 15). A similar interpretation was offered by Leonard Spector at the Carnegie Endowment, who said that North Korea used the nuclear issue to "create a looming sense of danger...[to] extract concessions" (Chanda 1994f, 16). Likewise, Zachery Davis at the Library of Congress suggested that the North's nuclear program was "designed to inspire concern" in order to obtain diplomatic and economic

concessions in exchange for nuclear restraint (Chanda 1994g, 15). Regardless of the final disposition of special inspections, Spurgeon Keeny (1994b, 2) observed that the June 1994 agreement was crucial because it prevented the further expansion of North Korea's nuclear weapons program. In his judgment, this enabled the United States to move beyond an essentially secondary objective, namely determining whether Pyongyang possessed one or two nuclear explosives, in order to solve the larger problem of an unrestrained North Korean nuclear weapons program with regional and international implications (Keeny 1994b, 2).

39. The North Koreans insisted that the light-water reactor had to be trouble-free and meet high safety standards, criteria they claimed South Korea could not satisfy (Hoon and Holloway 1994a, 22). An alternative explanation for this position may be that North Korean leaders feared that obtaining South Korean reactors would involve the presence of a potentially large number of technicians and workers who could expose a segment of the North Korean population to economic and political conditions in the South (Medeiros 1995a, 25). Indeed, for a government that had managed to isolate its citizens from the radical challenges and changes that confronted many communist states, the threat of regime collapse was "much higher after a partial opening of the society..." (Snyder 1995, 703). For their part, the South Koreans envisioned a central role for themselves in financing and constructing the LWR to avoid being marginalized in U.S.-North Korean discussions on political and economic normalization (Hoon and Holloway 1994a, 22).

40. Other problems included a North Korean demand for \$2 billion compensation for its gas-graphite reactors, agreement that the nuclear program would be halted on a step-by-step basis synchronized with delivery of replacement reactors and an alternate power source, and the opening of the two Yongbyon waste sites and implementation of full-scope safeguards only after the completion of the LWR (Chanda 1994i, 15). Why did so many issues and problems remain at such a late stage in the negotiations? Selig Harrison and Robert Manning, a former Bush administration official, have suggested that for North Korea "backsliding" was a bargaining strategy to obtain further concessions (Chanda 1994i, 15). Chinese Foreign Minister Qian Qichen supposedly informed Secretary of State Christopher that North Korean intransigence was only a negotiating tactic (Mazarr 1995b, 173).

41. Other sources have estimated the cost of the fuel oil and replacement reactors at nearly \$9 billion: \$4.7 billion for the oil (Towell 1995, 294) and \$4 billion for the reactors (Reiss 1995a, 276). Irrespective of the exact estimate, the United States is expected to pay only a part of the total cost (Sigal 1998, 9).

42. David Albright and Kevin O'Neill (1995, 27) estimated that at full capacity North Korea's gas-graphite reactors and reprocessing plant could have produced enough plutonium for at least ten weapons per year. Frank Barnaby (1993, 96) estimated a much greater capability, "about 30 nuclear weapons a year."

43. This was a sensitive subject in South Korea, where many officials opposed direct discussions between Washington and Pyongyang. The fear was that such talks would lead to deals that did not reflect Seoul's interests (Hoon 1994b, 22).

44. In early 1998 the turbulence in Asian financial markets caused the South Korean government to inform Washington that Seoul would not be able to pay its full share of the LWR project (Sanger 1998, A1). According to one South Korean official, devoting enormous resources to the project in light of potentially massive unemployment and austerity programs had become "a very delicate political problem" (Sanger 1998, A1). The funding issue resurfaced in May 1998 and seemed to imperil the Agreed Framework. According to North Korean officials, the United States was behind schedule on fuel oil shipments, which a State Department spokesperson acknowledged, and the LWR project had slowed, due to financial crises in Japan and South Korea (Rosenthal 1998, A10). As a likely consequence of these circumstances, North Korea announced it would unseal the Yongbyon reactor facility for "maintenance activities" and Pyongyang halted removal of the remaining 200 reactor fuel rods (Rosenthal 1998, A10). Despite these portentous signals, North Korean Foreign Minister Kim Yong Nam stated that once the United States was able to "catch up" on fuel oil deliveries, then Pyongyang would resume cooperation to implement the Agreed Framework (Rosenthal 1998, A10). However, a missile test in late August seemed to be the latest maneuver by Pyongyang to induce the United States to fulfill the terms of the Agreed Framework. According to Hajime Izumi, a professor at Shizuoka University in Japan and an observer of the situation, the test could have been "an important tool for gaining leverage" to compel fuel oil deliveries as a quid pro quo for a pledge not to sell missile technology to Iran or Libya (McIntyre 1998). Similarly, Dr. David Kay, a former UN weapons inspector, offered that the "North Koreans believe that the Clinton administration promised them a very large amount of money to abandon their nuclear weapons program" and the missile test was a not so subtle reminder that "they've not yet seen this assistance" (McIntyre 1998).

45. The United States was unable to break with this approach until after Carter's trip. At that time, the United States was willing to discuss the nuclear issue parallel to a freeze on Pyongyang's program. In other words, the North's decision to freeze the nuclear program occurred *with* rather than *before* the U.S.'s decision to negotiate broader political, economic, and security issues. This new approach provided the Clinton administration with political cover to drop the previous policy (Harrison 1994, 20).

Chapter IV

1. In 1920, South Africa received a League of Nations mandate to govern the area known as South West Africa. Although the UN declared in 1966 that the mandate was terminated and designated the territory Namibia in 1968, Pretoria continued its involvement in the area until early 1990 when the country became independent (Copley 1994, 802-04).

2. South Africa continued military operations in Angola until August 1988 when its troops were withdrawn under a cease-fire agreement (Copley 1994, 33).

3. The term "nuclear laager" is from Richard Betts (1979, 91). Laagers were encampments within a protective circle of wagons used by Boer pioneers in the nineteenth century. A "nuclear laager" is a metaphor for the siege mentality that seemed to influence decision making in Pretoria regarding the nuclear program.

4. This technology, known as the Helikon process, is a variant of the aerodynamic uranium enrichment technique (Krass, Boskma, Elzen, and Smit 1983, 20).

5. It was widely believed that South Africa did receive assistance from the West German company Steinkohlen-Elektrizitats-AG to develop the technology that would be used in a pilot-scale uranium enrichment facility (Spector 1990, 271). Further, Professor Ernst Becker, inventor of a jet-nozzle variant of the aerodynamic enrichment technique, visited the South African nuclear research center (Fischer 1994, 212).

6. Except for an eight-month interruption caused by a chemical explosion in 1979, the pilot-scale facility produced enriched uranium until 1989 (Reiss 1995a, 11). A "semi-commercial" uranium enrichment plant was opened at Valindaba in 1988 (Spector 1990, 288). This facility was intended to produce only low-enriched uranium (LEU) for the Koeberg power reactors (Albright and Zamora 1991, 29). The LEU produced at this facility could be "recycled" to produce the highly-enriched uranium necessary for nuclear explosives, but the fissile material used to manufacture South Africa's nuclear weapons was produced at the pilot-scale plant.

7. Nuclear explosives employ either an implosion or a gun-barrel technique. The implosion technique is described in Chapter III of this study. The gun-barrel design uses a chemical high-explosive to propel a sub-critical mass of fissile material from one end of a barrel in the assembled device into another sub-critical mass located at the opposite end of the barrel. The compression of these sub-critical masses results in an uncontrolled nuclear reaction (Glasstone and Dolan 1977, 15-16).

8. In the late 1970s, a criticality test was performed in a building at the Pelindaba site during which nuclear fission occurred briefly (Albright 1994c, 42). The purpose of this testing is to corroborate empirically the theoretical calculations about the precise amount of fissile material necessary to create a critical mass. In order to discern this mass, two sub-critical masses are moved together and neutron counts are made to determine criticality (Craig and Jungerman 1986, 178).

9. During a "cold test" a depleted uranium core is substituted for fissile material in order to ascertain the behavior of uranium metal under conditions that replicate as nearly as possible an actual detonation sequence (Reiss 1995a, 10).

10. Several years after the discovery of the Kalahari site a South African official acknowledged that the location was being prepared for a nuclear test (Fischer 1994, 209).

11. This was the same committee that recommended the manufacture of a small number of nuclear weapons, specifically seven devices (de Villiers et al. 1993, 100). The reason to build this precise number of weapons is not entirely clear, but seemed to be related to an estimate of the number of devices believed to be necessary to implement Pretoria's three-part nuclear strategy (Reiss 1995a, 29-30). Although Armscor became responsible for the nuclear program, the AEB continued to provide support. The transfer of the program to Armscor seemed to signal the militarization of the nuclear explosives project.

12. Other circumstantial evidence supported the nuclear test theory. Samples of thyroid gland tissue removed from sheep in Australia in November 1979 revealed elevated levels of radioactive iodine (Walters 1987, 50). It was believed by some involved with this analysis that a storm system that passed near the suspected detonation area was contaminated by radioactive debris from the test (Walters 1987, 50). Radioactive compounds from a test could have been deposited by rainwater onto pastures and absorbed by forage consumed by the sheep (Walters 1987, 50). Although disputes over the finding continued into the early 1980s, it is consistent with data from Samuel Glasstone and Philip Dolan (1977, 442), who have noted that "much (if not all)" of the debris from a low-altitude, low-yield detonation would "soon [become] accessible to removal by precipitation." The altitude of the suspected 1979 detonation was placed "at approximate sea level" and the yield at "two to four kilotons" (Albright and Gay 1997, 16). A principal hazard from contaminants washed from the atmosphere following such a nuclear test "arises from the ingestion of iodine-131, which...when it enters the body tends to become concentrated in the thyroid gland" (Glasstone and Dolan 1977, 442). In a recent article, David Albright and Corey Gay (1997, 17) stated that "slightly elevated levels of iodine-131" were found in the sheep thyroids examined in 1979.

13. South Africa also raised other, albeit more minor, objections to the draft treaty. First, Pretoria believed that the "inalienable right of all Parties to the Treaty to develop research, production and use of nuclear energy for peaceful purposes" provided in Article IV could be nullified by provisions in Articles I and II (United Nations 1968, 12). These articles prohibit certain activities that would enable non-nuclear weapons states from either acquiring or developing any type of nuclear explosives. Second, objections were raised to safeguard provisions in Article III(1) that Pretoria believed were so vague and open-ended that they could interfere with the country's mining operations (United Nations 1968, 12). South African uranium production is a by-product of gold mining, and it was feared that IAEA inspections of uranium processing would disrupt gold production. Third, South Africa asserted that Article III(1) safeguards were too intrusive and infringed on national sovereignty (United Nations 1968, 12). Fourth, Pretoria claimed that Article III(3) provisions against interference in the economic and technological affairs of a state inspected under the NPT were ambiguous and provided no guarantees (United Nations 1968, 12).

14. Earlier, in 1977, South Africa was expelled from the IAEA Board of Governors (Moore 1987, 106).

15. The decision to remove South Africa from the Committee on Assurances of Supply was somewhat ironic. The Committee was originally created to assuage concerns in importing countries that the nonproliferation policies of nuclear supplier-states would not restrict the export of vital technology for civil nuclear programs (Moore 1987, 107). As such, the Committee was designed to discourage nuclear self-sufficiency that could lead to a nuclear weapons capability. The irony is that by removing South Africa from the Committee Pretoria moved closer to nuclear self-sufficiency, which actually contributed to the problem that the nonproliferation community was attempting to prevent. This is not to ascribe culpability for South Africa's nuclear activities to the IAEA, but it does suggest that certain measures to prevent nuclear proliferation may have unintended consequences that contribute to the problem and not to the solution.

16. The safeguards agreement almost was not signed because the Egyptian delegation at the IAEA General Conference in September 1991 expressed reservations about South Africa's intention to abide by its obligations (Donnelly and Davis 1991, 5). The Egyptians were acting ostensibly on behalf of all African states that harbored doubts about South Africa given its past policies, but Egypt's motive was probably self-serving. Following Pretoria's expulsion from the IAEA Board of Governors, Cairo received the seat as the "most developed" nuclear state on the continent. The restoration of South Africa to the Board would cause Egypt to lose this prestigious position given the vast difference in the countries' nuclear capabilities (Donnelly and Davis 1991, 5).

17. Within a year of Pretoria's signing the NPT and the safeguards agreement, the IAEA conducted inspections at 77 locations in South Africa, including the pilot-scale uranium enrichment plant and the suspected test site in the Kalahari Desert (Wolfsthal 1992e, 36).

18. De Klerk's statement was apparently a reply to earlier allegations that connected Israel to South Africa's nuclear program. In addition to suspicions about an Israeli nuclear test conducted with South African assistance that may have been the source of the light signal detected by the Vela satellite in 1979 (Spector 1990, 273), there were also claims that these two countries jointly traded nuclear materials and related capabilities. For example, South Africa supposedly exchanged enriched uranium for Israeli nuclear and missile technology (Donnelly and Davis 1991, 3).

19. The long delay between the destruction of the nuclear weapons and de Klerk's disclosure about the arsenal can be attributed to political considerations. First, de Klerk did not want to enrage conservatives already opposed to political changes underway in the country. An announcement about the elimination of the nuclear arsenal prior to 1993 could have been the catalyst to unravel the transition to black-majority rule (Smith 1993c, A26). Second, announcing the existence and destruction of the weapons so close to the end of the Persian Gulf war could have invited the same intrusive inspections that had been imposed on Iraq (Albright 1994c, 38). In order to preclude these possibilities, de Klerk delayed the announcement until political circumstances were more auspicious.

20. The differences between tactical and strategic nuclear weapons have never been clear. However, for purposes of this study generic definitions are used for simplicity. Tactical nuclear weapons are intended to influence the outcome of military engagements within finite spaces, such as battlefields or limited ocean areas (Neuman 1982, 57). As such, this category would include nuclear-tipped artillery shells, land-mines, rockets, torpedoes, and anti-submarine weapons. Strategic nuclear weapons are meant to disrupt an adversary's capacity to wage war; thus, weapons such as nuclear-armed long-range ballistic missiles and intercontinental bombers are intended to attack a foe's homeland (Neuman 1982, 57).

21. The number of tactical nuclear weapons believed to have been based in Kazakhstan was small, perhaps no more than "a couple of hundred" (Reiss 1995a, 43).

22. The name of the Kazakstani capital city was changed from Alma Ata to Almaty in 1992. All references in this study to this city after that date will use the new name.

23. By signing the Lisbon Protocol, Belarus, Kazakhstan, Russia, and Ukraine became parties to START I in place of the former Soviet Union. Additionally, Belarus, Kazakhstan, and Ukraine committed themselves to the NPT as non-nuclear weapons states "in the shortest possible time" ("Fact Sheet: START I and the NPT (Lisbon Protocol)" May 1993, 11). Although the protocol was intended to address many issues, including nonproliferation, the agreement was criticized because it was vague in some areas (Lepingwell 1993d, 11). Probably the most important parts of the protocol were the "side letters" submitted by the signatories to President Bush. Belarus pledged to take "all measures [necessary] to achieve the status of a nonnuclear state" to include eliminating "all strategic nuclear offensive arms located in its territory...as provided by the START treaty" as long as Russia agreed to remove them (Lepingwell 1993d, 12). Kazakhstan guaranteed that it would eliminate "all types of nuclear weapons...located in its territory...as provided by the START treaty" (Lepingwell 1993d, 13). Ukraine committed to "nonnuclear status" in accordance with earlier Ukrainian parliamentary resolutions that declared the country's intent to become non-nuclear and to eliminate "all nuclear weapons...located in its territory...as provided by the START treaty" (Lepingwell 1993d, 12-13). Additionally, Kiev emphasized its right to exercise nonuse of the nuclear weapons located in Ukraine, and it called for the eliminated weapons to be dismantled under international control to ensure that the fissile material was not used in other nuclear weapons or exported to other countries (Lepingwell 1993d, 13).

24. Although the denuclearization of Belarus was generally untroubled, differences arose between Minsk and Moscow regarding withdrawal of the last eighteen SS-25 ICBMs (Golotyuk June 5, 1996, 2). An official at the Chief Command of the Russian Missile Forces asserted in mid-1996 that Belarus was "avoiding taking any practical actions to withdraw mobile regiments from its territory" (Golotyuk June 5, 1996, 2). In reply, the Belarusian defense minister noted that the withdrawal was supposed to be completed by December 31, 1996, so six months remained in the agreed schedule (Golotyuk June 5, 1996, 2).

25. Belarusian officials later expressed their dissatisfaction to President Clinton for not having obtained funds for the tactical nuclear weapons that they returned to Russia (Tsygankov January 18, 1994, 3). By 1995, nearly \$500 million in Nunn-Lugar funds were committed to Russia. Ukraine was intended to receive almost \$300 million, Kazakhstan about \$100, and Belarus only \$76 million ("Fact Sheet: Safe and secure dismantlement of nuclear weapons in the new independent states" July 1994, 28; "Fact Sheet: Safe and secure dismantlement of nuclear weapons in the new independent states" December 26, 1994, 851). Belarus's rapid denuclearization was a major reason why the country received far less compensation than Kazakhstan or Ukraine.

26. Although the Kazakstanis had indicated their intention to retain the Soviet nuclear arms on their territory, they had few alternatives except to relinquish the tactical nuclear weapons. These devices were under close Russian control, they constituted a relatively small arsenal, and they required expert maintenance (Reiss 1995a, 141). Insofar as eliminating the strategic nuclear weapons on their soil, the Kazakstanis could exert more influence on the pace and terms of that withdrawal (Reiss 1995a, 141).

27. It was also during this period that reports appeared to suggest that Kazakhstan was a poor nuclear custodian. One report in a Tunisian weekly, *Al-Anouar*, alleged that Iran had assembled three nuclear weapons with components supplied by Kazakhstan (Illesh January 14, 1992, 1). Of course, Kazakstani officials denied this and similar reports. The Kazakstani foreign ministry subsequently issued a statement that such reports were attempts to damage Kazakhstan's reputation on the eve of its admission to the UN (Yesilbayev January 30, 1992, 4). The statement added that the "leadership of the Republic of Kazakhstan has repeatedly affirmed its commitment with respect to [the] nonproliferation of nuclear weapons" (Yesilbayev January 30, 1992, 4).

28. Nazarbayev's concern about Kazakstani security was no doubt also assuaged by the 1992 Tashkent collective security agreement whereby an attack against one CIS member would be treated as an attack against all members (Morrocco 1992, 23).

29. In early 1993, Nazarbayev outlined five conditions that would accelerate his country's denuclearization. First, Kazakhstan should be permitted to reuse the ballistic missiles deployed on its territory to launch commercial payloads into space for foreign customers. Second, fissile material removed from the nuclear weapons based in Kazakhstan either should be recycled for use in the country's nuclear power reactors or used as an export item, presumably in barter for items that Kazakhstan required. Third, empty missile silos should be available for future uses, possibly to house nuclear power stations. Fourth, Kazakhstan should receive its share, preferably directly from the United States, of the Nunn-Lugar funds being distributed to Russia. Fifth, Kazakhstan required security assurances (Ustiugov 1993, 34). Of these conditions, the first and third were contrary to START I and could not be granted to Almaty without amending the treaty, which was not contemplated as a possibility at the time. The second condition would have posed problems for the nonproliferation community, specifically the possible trading of weapons-grade fissile material on the global market. The fourth and fifth conditions were more attainable. Moreover, these conditions seemed to be priorities for

the Kazakstanis, who reiterated in meetings with Russian officials several months later that financial compensation and security assurances were essential for Almaty to relinquish its nuclear arsenal (Golts November 27, 1993, 2).

30. In addition, the United States and Kazakhstan signed agreements on scientific cooperation, defense conversion, and investment protection (Clinton and Nazarbayev February 21, 1994, 97).

31. This was enough highly-enriched uranium to construct between 24 and 36 nuclear weapons (Morrocco 1994, 27).

32. Although Ukraine insisted that there be international monitoring of nuclear weapon dismantlement, by early 1993 Kiev exhibited less interest in the idea, primarily because it elicited no support in the West (Lepingwell 1993a, 49). In addition to problems related to the creation and staffing of an international monitoring system, the United States was concerned that if Western experts participated in weapon dismantling in Russia, then Moscow would demand reciprocal involvement by their specialists in elimination efforts in the United States (Lepingwell 1993a, 50). American officials were opposed to this possibility because classified information pertaining to U.S. nuclear weapons could be revealed to Russia (Lepingwell 1993a, 50).

33. Observers were divided over whether Ukrainian nuclear weapons would deter possible Russian threats or whether they would have unintended and negative consequences. John Mearsheimer (1993, 51) advocated Ukrainian nuclear arms as "the only reliable deterrent against Russian aggression" given their troubled history. Others were decidedly opposed to the idea for several reasons. First, Ukraine could not retain the nuclear arsenal without raising tensions with Russia that could lead to armed conflict (Felgengauer July 9, 1993, 4). Second, since the ballistic missiles on Ukrainian territory were more suitable for intercontinental attacks, Ukraine could become a target for nuclear strikes from states fearful that the weapons were aimed at them and not just Russia (Lockwood 1993c, 23; Miller 1993, 75). Third, Ukraine had inherited a nuclear capability that over time would require greater maintenance than the existing Ukrainian infrastructure could provide (Kincade 1993, 116). The Ukrainian Minister of Environmental Protection estimated that it would cost Kiev "more than \$40 billion" to develop the infrastructure to maintain a nuclear deterrent (Skachko April 27, 1993, 3).

34. Kuchma was referring to negotiations that began in 1992 for the United States to purchase from Russia uranium that had been "blended down" from weapons-grade material to reactor fuel.

35. In his first speech to the parliament following his appointment as prime minister, Kuchma outlined the grave economic circumstances that confronted Ukraine, and he pledged remedial action to ease the situation (Nahaylo 1993, 39). Given his technical education and former employment in the Soviet ballistic missile industry, Kuchma probably had a better appreciation for the value of the strategic nuclear weapons than most other Ukrainian officials. Kiev would subsequently assert that these weapons

were worth \$6 billion (Lepingwell 1993b, 62). While this claim may have been accurate, it raised problems. Most, if not all, of the nuclear weapons contained plutonium. Since using plutonium in civilian power reactors is uneconomical and there is no other non-weapon uses for the material it was nearly valueless as a commodity on legitimate markets. Further, because plutonium is toxic and poses a proliferation risk, costly measures are necessary to ensure safe and secure storage of the material (Lepingwell 1993a, 48). As such, eliminating warheads containing plutonium was not a profitable enterprise. Even dismantling warheads containing only highly-enriched uranium entailed expensive measures. According to Western experts, if Russia charged Ukraine to dispose of the nuclear weapons, Kiev would recoup little financial compensation for the fissile material removed from the devices (Lepingwell 1993b, 64).

36. During this period reports began to emerge claiming that a combination of inadequate funding and a lack of technical expertise in Ukraine created situations where ballistic missiles and nuclear warheads had become unsafe (Litovkin February 16, 1993, 4; Litovkin April 7, 1993, 5). Russian officials urged the immediate removal and dismantlement of nuclear weapons deployed in Ukraine (Russian Federation Government April 6, 1993, 2). Ukrainian denials included a foreign ministry statement asserting that Russian allegations about unsafe conditions in the nuclear arsenal were attempts "to extend Russia's jurisdiction to these weapons and to deprive Ukraine of its right to compensation for their components" (Kamorin April 2, 1993, 3). Ukraine's resistance to allow Russian specialists to perform maintenance on the weapons seemed to be based on a concern that their presence would constitute jurisdiction over the arsenal, which Kiev rejected (Tsikora April 8, 1993, 2).

37. In another agreement signed at Massandra, Ukraine ceded the Black Sea Fleet and all support facilities to Russia in exchange for cancellation of Ukraine's oil and gas debts, which exceeded \$2 billion (Kiselyov 1993, 7; Leskov 1993, 9).

38. In early December 1993, the United States and Ukraine signed five implementing agreements for over \$152 million in aid to eliminate strategic nuclear weapons, to develop an export control system, for a government-to-government communications link, for emergency response equipment, and for assistance to control civilian fissile materials (Lockwood 1994a, 28).

39. START I does not identify which strategic nuclear systems must be eliminated to fulfill treaty-mandated reductions, so there was concern that Kiev would retire the SS-19 ICBMs and retain the SS-24s. In addition to being newer and less hazardous than the SS-19s, the SS-24s were produced in Ukraine at the Pavlograd Machinery Plant, which would have facilitated maintaining the missiles in the short-term (Felgengauer June 8, 1993, 5). The fact that Leonid Kuchma had once managed the Pavlograd plant and was knowledgeable about the SS-24 system no doubt heightened Ukrainian interest in these missiles (Lockwood 1993d, 22).

40. In spite of the Chernobyl accident, Ukraine did not develop the same aversion to nuclear energy that emerged in Belarus, possibly because Kiev elevated economic priorities over public opinion (Marples 1993b, 43). The nuclear debate in Ukraine was certainly influenced by Chernobyl, but given the country's lack of indigenous energy resources renunciation of nuclear power was an unrealistic choice (Stent 1994, 87; Zlenko 1993, 12).

Chapter V

1. South Africa is an exception to this statement, because changes in the security environment set the stage for policymakers in Pretoria to eliminate the nuclear arsenal.

2. The declining incidence of interstate violence may facilitate this goal, but it would be premature to presume that attempts to resolve security threats will dissuade all countries from remaining or becoming non-nuclear weapons states. There are, as Edward Rhodes (1995, 81) has pointed out, "atavistic political entities," such as Saddam Hussein's Iraq, that continue to pose obstacles to a more peaceful international community. In these cases, military vigilance by other countries as well as dialogue and negotiation with these states will be important.

3. A recent expression of this view of the nonproliferation regime was offered by Indian Defense Minister George Fernandes who stated that he would ask President Clinton only one question: "Why is it that you feel...that you can trust China with nuclear weapons, just as you can trust yourselves with nuclear weapons, and you can trust the Russians and the French and the British, but you cannot trust India?" (Burns 1998d, A6). Fernandes added that he did not understand "why India and Pakistan should be seen as blowing each other up when nuclear weapons in the hands of the United States and China are seen as stabilizing factors" (Burns 1998d, A6).

4. In recent years the Chinese have endeavored to increase trade with the Indians and to ease military tensions by reducing troop deployments in disputed border areas (Cohen 1998, A27). In Pakistan's case, a hopeful sign of improved relations appeared in 1997 when one of the main themes in Prime Minister Nawaz Sharif's election campaign was a call for a rapprochement with India (Kifner 1998, A3).

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